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NEW COMPUTER EXPRESS

FIRST NEWS • FIRST REVIEWS • BEST BUYS • YOUR WEEKLY GUIDE

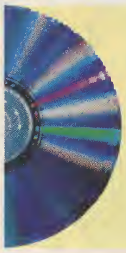
THIS WEEK

AMIGA
Turn your A500 into a power tower **Plus** the latest high power assembler

ATARI
How you can produce great graphic adventures **Plus** medical advice on CD

PC
20Mb floppy disks on the cheap **Plus** an upgrade for your trusty SideKick

MACINTOSH
Make your Mac look like a NeXT **Plus** why the best pictures are cheesy...



CD ON A SHOESTRING

FULL DETAILS OF A CD-PC WHICH WON'T BREAK THE BANK – PAGE 7

SOLD OUT!

So that was Christmas...
but now the dust has settled
EXPRESS can reveal:

- The **most popular** computer
- The **best selling** console
- The **chart topping** game

and the ones which **flopped**...
Turn to page 4

WINNER?
OR LOSER?
A HIT?
OR A MISS?

INSIDE

TOP TIPS YOU NEED FOR YOUR AMIGA, ST, PC, MAC, ARCHIE, CPC, C64 & SPECTRUM AND PAGES OF

SHOPPING EXPRESS

BARGAINS !!!

DON'T LET THEM RIP YOU OFF!

How the law can protect your work

The best of the add-ons

Printers, scanners modems... what should **your** next step be?

WORKING WITH WORDS

ALL THE WORD PROCESSING OPTIONS FOR THE AMIGA & ST

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frontend

edited by Colin Campbell

BRAIN DRAIN GAME

Quite an eyeful

This man is wearing the Private Eye ultra-miniature virtual display. As you can see, it will float a full size computer display in a space about two feet in front of the user's eyes.

The system plugs straight into any PC and offers a CGA display.

You can jack into this for £599 by calling 0428 76241, or you can wait for an exclusive review in next week's *Express*. ■

Point the finger at snoopers

Sick of the little sibling playing your computer while you're out? Afraid that some nosey git might stumble across those text files containing information of a delicate nature? If so, Toshiba could have the answer.

An almost fail-safe security device is on the way which is based on finger-print verification technology. If you want to turn on the computer, you must lay your index finger on a lightbox which is not much bigger than a mouse. A picture of your finger will be taken and compared with files on memory. If your finger 'checks' then the computer springs into life; if not the micro will stubbornly refuse even to flicker.

Finger checking is as accurate as eye retina scans and palm prints, but a good deal cheaper and space economical. Toshiba says its system will be ready later this year. ■

NEWS
Express
Publisher

EXPRESS YOURSELF

Power-Up has devised an intriguing new deal designed to persuade you to try out its new DTP package *Express Publisher 2.0*.

If you already own a PC-based DTP program all you have to do is rip out the first page of the manual, and take it to your dealer. For the trifling sum of £49.95 your dealer will furnish you with a full copy of *Publisher*; it normally retails at £159.95

A spokeswoman for Power-Up said the firm wanted users to have *Express Publisher* as well as their old DTP system to show "that ours is best". For more details, see your dealer.

ONE FOR WAGGLERS

This is the Stingray, which manufacturer Logic 3 tells us is the state of the art in joysticks. It can be held in the left or right hand, doesn't hurt like hell after ten minutes of alien slapping and costs a very reasonable £14.95. Call 081-900 0024.

Crucial Vietnam data 'incompatible'

Pentagon computer tapes detailing the date, size and location of every bombing raid of the Vietnam War have been rendered useless because of incompatible computer files.

The tapes are just a few of the thousands of computer-based archives which are now unusable because the systems on which the data was originally inscribed have long been scrapped.

Although the software is still available, the Americans can find no way of accessing the millions of pieces of information. Important historical documents including the most extensive records of Americans who served in the Second World War are all but lost.

Official agencies say it is impossible to find the money needed to translate data kept on old style tape reels and punch cards.

Historians still investigating the infamous Vietnam raids have been denied the most comprehensive details they could have hoped for. And the further loss of health service tapes will make it impossible for many families trying to trace their family background.

US government officials are calling for a standard for official computer records. ■

20Mb FOR £20

A cheap floppy disk capable of storing 20Mb of information will be available early in 1992. Citizen has confirmed that full production of high density PC floppy disks will begin at the end of this year.

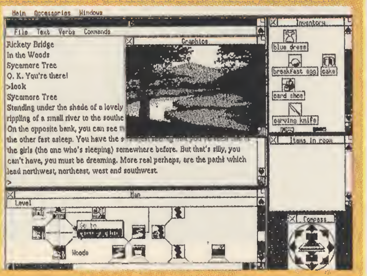
At just £20 each the disks will quickly challenge the dominance of bulky hard disks. Citizen claims that its 'high-speed-read' floppy will work at the same speed as a low-cost 20Mb hard disk.

Negotiations are underway with mainstream PC manufacturers to build forthcoming models with Citizen's special disk drive, which can also read low-density disks. PC manufacturers will then be able to offer cheap alternatives to entry level hard disk models. Some have suggested that this move will herald the re-emergence of the single drive IBM compatible.

Citizen points out that the floppies will prove crucial to portable users. Instead of cut-down but still bulky hard disks, laptop owners will be able to carry all their information on one 3.5-inch floppy disk. Software developers will also be free to produce large programs on a single disk.

A prototype was shown at the end of last year, and Citizen says high levels of interest have persuaded the company to press ahead with production. ▩

Through Windows



```
Rickety Bridge
In the Woods
Sycamore Tree
O. K. You're there!
>look
Sycamore Tree
Standing under the shade of a lovely
rippling of a small river to the southe
On the opposite bank, you can see
the other fast asleep. You have the s
the girls (the one who's sleeping) somewhere before. But that's silly, you
can't have, you must be dreaming. More real perheps, are the paths which
lead northwest, northeast, west and southwest.
>
```

Virgin is releasing a compilation of three classic Magnetic Scrolls games specially enhanced to run on the impressive new Magnetic Windows system first shown in *Wonderland*.

The new versions of *Guild of Thieves*, *Corruption* and *Fish* will be icon and window driven, making the play easier, faster and more fluent. *Wonderland*, which was released in this format late last year, has already proved immensely popular.

Each of the games on the new compilation was a big seller in its original format and Virgin believes that the combination of styles they offer will make the package another hit. *Guild of Thieves* is a rather traditional treasure hunt game, *Fish* is a humorous whodunnit and *Corruption* has a contemporary narcotics theme.

The *Magnetic Scrolls Collection Volume 1* is due out late March at £29.99 for the Amiga and ST

WORLD'S FASTEST LASER

Kodak has launched a massive laser printer capable of an unprecedented 92 pages per minute.

Called the Model 24, it features the processing power of three Amigas, plus 18Mb of memory and a 20Mb hard disk.

Resolution is the standard 300 dots per inch – a good laser working at the same res can manage about six pages per minute. In comparison, Amstrad's infamous PCW printer working flat out in dismal draft mode can just about hit one page per minute.

Unfortunately, the Model 24 is above most of us. It's the size of a small car and costs a good deal more. ▩

Information overload

The Software Toolworks has launched a complete reference library for the PC on CD-ROM format.

The disk, which costs £99, includes eight massive works of reference. They are: *Webster's Dictionary, Thesaurus and Dictionary of Quotable Definitions* plus the *Dictionary of the Twentieth Century, New York Public Library Desk Reference, the Guide to Concise Writing* and a memory resident spelling checker. There's also a directory of American business addresses, although that will be of limited use to UK buyers.

The Software Toolworks Reference Library will work on any PC with a CD-ROM drive.

For more details of the disc call Software Toolworks on 0444 831761. ▩

The low-tech link

Who can forget the button twiddling delights of that forerunner to the art program, Etch-A-Sketch? Now, 25 years after its original launch, Etch-A-Sketch is back.

Massachusetts-based joiner John Goodman, who has been an Etch-A-Sketch enthusiast almost from the beginning, has hooked up his Macintosh to the Etch-A-Sketch in order to check the patterns before he carves wooden creations.

Using art programs of his own making he designs pretty patterns (pictured) which are then transferred to the Etch-A-Sketch. If the pattern is correct, it's linked to a router which follows the Etch-A-Sketch design and carves it into wooden panels.

Goodman says his creation is just a touch too specialised for commercial release. ■

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ST still strong

- Sales of the ST in 1990 were up 30 per cent on 1989 levels.
- Atari says 90,000 STs were bought in the run-up to Christmas.
- There are now just under 500,000 ST owners in the UK.
- Atari spent £2.5 million advertising the entry level Discovery Pack in the Christmas period. Most went into a highly successful TV ad campaign.
- The worldwide installed base of STs is still higher than that of the Amiga – 2.5 million. ■

PCs in the shade

Home users are still prepared to invest in computers, but nervous businessmen are cutting back. For the latest PC market research turn to page 9. ■

No stopping the Amiga

- 140,000 Amigas were bought in the last three months of 1990.
- Throughout the year, Commodore sold just over 200,000 Amigas.
- The installed base is now 500,000 in the UK, with 2,000,000 worldwide.
- Commodore expects a 25 per cent increase for 1991 which would raise the UK user-base to an incredible 750,000. ■

Mirror image

About six weeks ago a *Daily Mirror* competition gave away 50 Lynx games machines and 60 STs. The newspaper received 140,000 entries for the Lynxes and 120,000 for the STs. ■

New manufacturers figures released show an unprecedented

BRITAIN IS COMPU

Report by Colin Campbell

Last week most of the manufacturers released long awaited performance figures for the end of last year. They represent the state of computing in Britain today...

SALE
NOW ON
NIKON 399 200
HITACHI 699 100
SONY 599 50
MINOLTA 179 70
ATARI 279 20
BETACOM 49 20
SALE

• *Dixons: computers represented the chain's best business.*

More and more people are leaping onto the computing bandwagon, despite gloomy predictions of a 'mini-recession' in the computer trade.

During the last three months of 1990 thousands of people in this country became computer owners for the first time. Among consumer electronics products in general, computers and games consoles were the only lines to report an upturn in sales.

According to the Government's Central Statistical Office, High Street spending was down by 0.8 per cent over Christmas. But all the hardware manufacturers have reported an increase on last year's sales while leading electronics retail operation, Dixons, says computers were by far the most successful product. Television sets, video recorders and cameras suffered from recession blues in many stores.

Naturally, some micros performed better than others in the crucial run-up to Christmas. As expected it was another 16-bit year with both the Amiga and Atari ST topping the hardware chart. Stocks of both machines had virtually run out by the end of the year.

Now, more than a million people in this country own either an ST or an Amiga. The split between the two machines is as good as even.

Nearly half a million people now own either a Sega Master System or Nintendo console. But it was the Sega Megadrive which led the console charge with sales estimated to have broken the 100,000 level in just three months.

Even so, it hasn't been so good for all the machines. Amstrad's CPC console the GX4000 was discounted ruthlessly at the end of the year as retailers found they could not shift their stocks. The C64-based Commodore GS suffered the same fate. Both Amstrad and Commodore are putting a brave face on what can only be described as a failure to soften the impact of the Japanese consoles.

> **"More than 100,000 people bought a Sega Megadrive between September and December 1990"**

Home computers have been increasing in popularity every year since 1985, but many industry watchers were bracing themselves for rough times as consumer spending tightened. However, optimistic hardware manufacturers were rewarded as computers dodged the High Street squeeze.

Now the trade is rubbing its hands in anticipation for a healthy 1991 which should see more increased sales of the Amiga, ST and Megadrive as well as uncommonly high sales of the PC by home buyers.

One distributor told *Express* that an unprecedented number of people had expressed interest in 286 and 386 VGA PCs. Amstrad's much admired 'Generation 3' range appears to have gone down a storm with personal, as well as corporate buyers.

Once again many had predicted that 1990 would be the C64's last year. They hadn't reckoned on the machine's extraordinary staying power.

People have been predicting the end of the 8-bits for at least two years. But the C64 is still a major hit. Last year a total of 250,00 were sold, 150,000 of which had been shipped since

C64 won't lay down

- 150,000 C64s were bought in the last three months. Some suggest these are being picked up by 'non-expert buyers' especially through big mail order catalogues.
- Throughout the year the C64 managed sales of a quarter of a million.
- Since 1982 nearly two million C64s have been bought in Britain and Ireland. ■

• *C64: still surprising even Commodore.*

• *Lynx: TV ads pulled it through.*

dened national enthusiasm for buying micros

PUTER CRAZY!

• *Crowding around to buy: computers were a popular choice over Christmas.*

September.

The cartridge-based GS, which many thought had been brought in to compensate for a slipping C64, could only manage a paltry 20,000.

> **"One million people in this country now own either an ST or an Amiga"**

It's not all good news on the 8-bit front. The Speccy limped along without much encouragement from Amstrad, while the revamped CPCs have still to stamp their authority on low-cost computing.

Independent dealers who have traditionally felt the worst of computing's hard times are now being denied the fruits of this new enthusiasm. It's true that there are more computers being bought, but there are also more stores stocking machines. In the High Street almost all the major electrical retailers are stocking at least two computers and one console. This is a far greater commitment than at any time since the original console fad of the early 1980s.

Nevertheless, more people using computers is obviously great news for those of us who have long been enthusiastic, but with everyone going on about 'hard times' why have computers continued to increase in sales?

It could be because buyers perceive computers as being useful as well as fun, and not just another entertainment gadget (like a TV, video or stereo). The reality could be a good deal easier to explain.

Computing is still very new to most people. The market is growing and will continue to grow for the foreseeable future. The only question is, how big can it get? ■

One in the hand

• *Atari's Lynx: price cut has made a difference.*

● The Lynx clocked up sales of 50,000 – but the success did not come cheaply. Atari splashed out £2 million advertising the product.

The firm says sales were not as high as expected until the £50 price cut was announced in mid-December. An Atari spokesman commented: "We spent a lot advertising the Lynx. But now I don't think there is anyone in the country who does not know what the machine is." Atari reckons the Lynx will come good this year.

● Specific numbers for the Nintendo Gameboy are not available but it is generally accepted that the £69 gadget outsold Atari's more expensive Lynx. The Gameboy is a big hit with youngsters many of whom asked for the machine specifically in Christmas lists. ■

Games offer few surprises

TEENAGE MUTANT HERO
TURTLES

• *The Turtles topped the Christmas chart.*

As predicted by just about everybody, *Teenage Mutant Hero Turtles* has grabbed the coveted Christmas number one position.

Gallup's Christmas chart was a catalogue of old games and big name licenses. The highest performing 'original game' was Electronic Arts' *Powermonger* at number eleven.

Turtles beat Ocean's *Robocop II* to the top position – it was the first year since 1987 that Ocean has not won Christmas number one. US Gold, which came first in 1986 and 1987 could not manage a full price game in the top twenty although its budget label Kixx did very well over the holiday period.

Double Dragon at number three was the top selling budget game followed by former Xmas winners *Operation Wolf* (6) *Out Run* (7) and then *Target Renegade*, *Kwik Snax* and *Paperboy*.

Virgin's coin-op conversion *Golden Axe* probably deserved better than number four. The only compilation in the top ten was Ocean's *Hollywood Collection*. ■

• *Amstrad: An OK Christmas.*

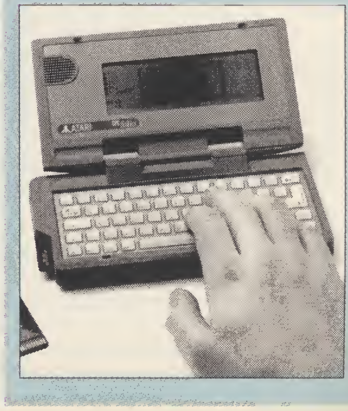
Amstrad's quiet time

Amstrad has stepped back from Atari's and Commodore's celebrations saying that it had "an OK Christmas". A spokesman offered: "It wasn't a bumper Christmas for us. We did alright with the Spectrum and CPC range.

"I think Atari and Commodore had a good time and Sega and Nintendo did quite well out of it."

Amstrad watchers take note. If the firm was at all bothered by its quiet Christmas it would not be admitting to any such thing. Sources suggest the company is up to something – we reckon three launches will be announced before Easter... ■

Gloomy times for Portfolio



Despite a high profile ad campaign Atari only managed to sell 30,000 Portfolios. It had been hoped that the 'serious' hand-held computer would be an attraction to serious Christmas buyers, but it proved to be a disappointment.

Atari says sales will pick up over the next two years as more models are introduced, and as pocket computers become widely accepted. ■

Who's teaching the teachers?

• *Computers in schools: teachers lack confidence.*

Many trainee school teachers lack confidence to use computers in the classroom, according to research from the University of Lancaster.

The report says that only 60 per cent of student primary teachers used computers at all and a mere six per cent used them regularly.

This is despite a recently extended National Curriculum which advises that computers be used in the teaching of every subject at primary school level. It stipulates that by 'key stage two' (12) a child should be able to "interrogate data in a computer database." In English a child should be "encouraged to use a spell checker" while in maths they should be able to use a simple spreadsheet showing, for example, cost and income.

Co-author of the report, Dr Jim Ridgway, is concerned about the low numbers of computer-literate primary teachers coming out of colleges. He points out there irony of a system where many teachers know less about computers than the National Curriculum expects a 12-year-old child is to know.

"It's a crazy situation," says Dr Ridway. He reckons that the percentage of primary school teachers who could use computers in the classroom in the ways in the National Curriculum "is less than 10 per cent."

His research shows that out of a group of 109 trainee teachers on their five week teaching practice less than 70 had used computers and only 20 per cent had used one more than once.

All teacher training courses are now required to give students a certain amount of grounding in computers. But this will only be effective if these teachers are willing to use computers in the classroom, reckons Dr Ridgway.

"The problem is that the National Curriculum is putting so much pressure on teachers from all direction," say Dr Ridgway. This leaves them little time to learn more about computers and how they could be used effectively in classrooms.

He believes the way forward is to encourage teachers by showing them how software can be beneficial in teaching all subjects, not just IT. He is involved in a Department of Employment-backed project called Supporting Technology Across the Curriculum which aims to do just that. It has already produced a document which details concisely the National Curriculum's stance on IT. It also aims to demonstrate to teachers simple and easy ways to use software in class as well as training IT co-ordinators for schools.

"If you look back ten years things have come a long way. But if you look at what you need for an ideal situation things are still gloomy. But I'm reasonably hopeful at the moment," says Dr Ridway. ▩

An affordable 386 PC with a 650

CD-ROM P

A low-cost IBM compatible with built in CD-ROM drive has been launched by Northampton-based Reeves.

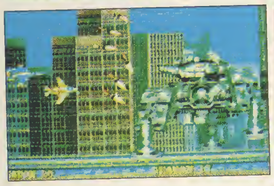
Costing just £1,499, the colour 386SX machine features a Sony CD-ROM player built into the CPU, along with the standard 3.5-inch disk drive. A mono version is also available for £1,399.

Called the PC386SX-20CD it zips along at 20MHz, features a 1Mb RAM on board, with the CD-ROM player holding an impressive 640Mb of information.

Reeves will not be well known to *Express* readers mainly because it has hitherto shied away from selling through computer stores. Buyers can only get hold of kit through Reeves itself. The firm says this allows for better support as well as "keener pricing".

Certainly the CD-PC is a first for this country. Most manufacturers have dithered on the possibilities of a CD-based PC, and rejected the idea because the market has yet to blossom. However, Reeves points out that a phenomenal number of CD-ROM databases have been launched over the past six months indicating that an all-in-one hardware platform is eagerly awaited.

Spokesman Alan Watt explained: "We've seen interest in CD-ROM grow ten fold over the past few months. It's especially active in the US, and we decided that the UK really needs a cost



• Smash TV: *unleashed.*

Game show with a grizzly twist

Ocean has snapped up the rights to the award winning *Smash TV*, the grizzly arcade game from Williams.

Based on a glitzy and violent television game show the arcade version Of *Smash TV* was voted the most innovative video game at a recent coin-op convention in New Orleans. Players take the part of contestants who have to gorily massacre each other to win prizes such as videos, microwaves and other consumer fodder. The game features hordes of sprites which have to be mercilessly slain.

Ocean promises the conversion will be "more violent than *Narc.*" and is obviously hoping for similarly massive sales. *Smash TV* is due to be released in September on all formats (bar PC), the company predicting that it will be one of the Christmas blockbusters for 1991. ▩

Computers cut cribbing

A Californian 'anti-cheat' organisation has developed a PC program designed to stop students sneakily copying from text books and each other.

Glatt Plagiarism Services has taken 10 years to develop the software, the *Glatt Plagiarism Screening Program*, which is based on the assumption that everyone's writing style is as individual as their fingerprints.

The program takes a piece of a student's writing and blanks out every fifth word. The student then has to fill in the blanks. The level of plagiarism can then be detected depending on how well the student has managed to reproduce their own writing style. The program also includes exercises and competency tests and can be adapted to work in foreign languages as well.

Glatt estimates that the amount of plagiarism in schools and universities can range from between 50 to 80 per cent, though many students can do it unconsciously. It reckons that so far the program, which retails for $250 in the US, has been 100 per cent perfect in uncovering cases of copying. ▩

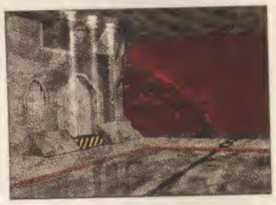
Megabyte Amiga games planned

Team 17, a new software house aiming to produce high-quality software to stretch the Amiga to its limits, has announced its first two games.

Full Contact, due out later this month, is an action game which the company claims has "fantastic audio-visuals and breathtaking animation."

March will see the release of *Alien Breed*, a 1Mb game set in an *Alien*-style infested spaceship. Loads of different weapons and special effects are being promised as well as the obligatory "breathtaking animation." Both games will cost £24.95.

All subsequent Team 17 games will also be written exclusively for Amigas with 1Mb of RAM. "We feel that RAM is cheap enough and many users already have expansions. Software should be exploiting that fact and believe me, we will," reckons development manager Martyn Brown. ▩



• Alien Breed: *first of many 1Mb games from Team 17.*

Get a Kixx from the sizzling bargains

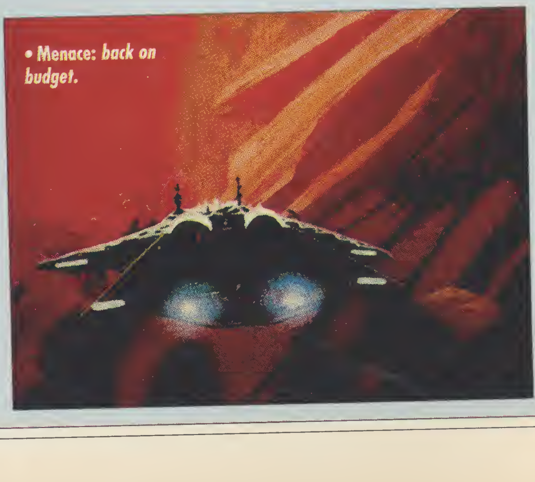
Psygnosis and US Gold are preparing to launch two new 16-bit budget labels.

Psygnosis will be releasing the first ten titles on its Sizzler label, including *Menace*, *Ballistix* and *Blood Money*, very soon. The company is remaining tight-lipped about the exact date, but confirms that "it won't be too long now."

Titles will be released at £7.99 and £9.99 and will feature games licensed from other publishers as well as classics from Psygnosis' own vaults.

US Gold, meanwhile, is setting up Kixx 16-bit to co-exist alongside the company's present 16-bit budget label, Klassix. The new label will release action software, starting with *Barbarian II*, *Thunderblade* and *Blasteroids*, for £7.99 while the Klassix range will concentrate on more complex strategy games for £9.99 and £14.99.

While Electronic Arts hasn't got a new label to announce, it is releasing three more titles in its renamed Star Performers budget range: *Skate or Die*, *Ferrari Formula 1* and *Chuck Yeager's Advanced Flight Trainer*. All will retail for £9.99. ▩



• *Menace: back on budget.*

a 650Mb CD-ROM drive arrives at last – and it's British!

PC HERE AT LAST

effective CD-ROM based PC."

Although the CD-PC is mainly pitched at businesses the firm hopes home users will find the memory capabilities of CD-ROM technology "educational and fun". Watt commented: "The mass storage makes it ideal for education. There are so many programs stacked with information. *The World Atlas* springs to mind, it contains information on every single country on the globe.

"The attraction here is that you've got a disk which can't be destroyed and which contains a remarkable amount of information."

Reeves says it has no plans to fit the CD-ROM drive into any of its lower specification PCs. "The 20MHz processor is really necessary to get the most out of the drive, although we could easily fit the CD-ROM to a cheaper machine," explained Watt.

He added: "Anyone who needs reference and information should be looking at CD-ROM. Take telephone directory enquiries. Soon they will be charging 48 pence for a call. But you can get a nationwide telephone CD-ROM relatively cheaply.

Reeves was set up 18 years ago in the hi-fi market, but switched its attention to computing in 1982.

The firm expects sales here to be healthy with orders of over 1,000 a month predicted for the summer. ▩

• *The CD-based Reeves PC: breaking new price ground.*

Nintendo in court

Nintendo is yet again embroiled in a massive law suit relating to its consoles.

The latest courtroom battle features American Video Entertainment (AVE) a company which produced and sold unofficial games for the Nintendo Entertainment System.

AVE is claiming $105 million damages against Nintendo, alleging that new designs for the NES stop unauthorised cartridges running on the machine. AVE says that Nintendo has created a monopoly by ensuring that only officially licenced games will run.

AVE's own cartridges had been designed to override previous lock-out techniques. ■

PC sales slump as SXs take off

Figures recently released suggest that sales of IBM compatibles have slumped alarmingly over the past year. According to computer research specialist Context, sales of desktop PCs fell by some eight per cent during 1990.

Amid a forest of facts and figures it was revealed that PC sales switched from the beleaguered XT to the Windows compatible 386 and 486 markets. The area of the market which most obviously bucked the downward trend was the 386SX family of PCs. Machines making use of the Extended Industry Standard Architecture (EISA) bus were also holding up. Figures relating to EISA machines are slightly distorted by the fact that sales were already low.

Overall, however, most recently published reports indicate that the PC market, which is closely tied to business use and the state of the national economy, is grinding to a halt. The general feeling being that growth is almost zero.

While sales growth of deskbound PCs is slowing to a halt, yet another report, this time from International Data Corporation (IDC), indicates that growth and sales in the portable PC market is looking healthy.

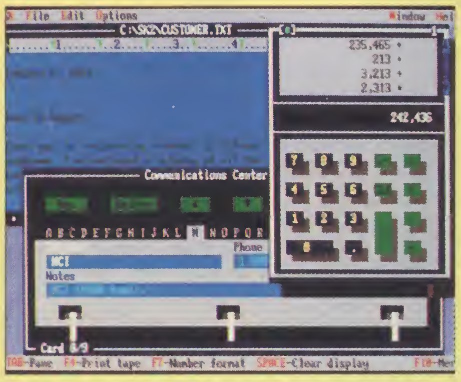
ICD predicts a strong rise in portable sales of 20 per cent during 1991 with notebook PCs leading the way. However there is a sting in the tail with predictions that by 1995 sales in mobile PCs will drop by £10 million. ▩

Tandon deliver

Not only has Tandon decided to cut its prices by up to 30 per cent across its product range, it is also releasing two new PC series.

The N series comprises 286 and 386SX machines all of which are a diminutive 2.5-inches high. Machines throughout the range feature VGA graphics, 40Mb hard drives, single 3.5-inch floppy drives, and twin expansion slots. The entry level N is a mono 286 coming in at £1,049.

The SL II series provides an easy upgrade path to the 486 PCs. The entry-level machine has a 286 motherboard and mono monitor, price: £1,149, The top end colour PC costs £3,899. ▩



• *Borland is launching the follow up to the successful PC desktop organiser* **Sidekick** *next week.* **Sidekick 2**, *like its predecessor, will offer PC owners a variety of useful functions, by acting like an advanced digital Filofax. New features will include network support and full mouse support.* **Sidekick 2** *will retail for £79.95.* ▩

Poqet Perfect

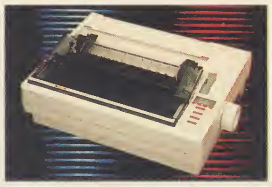
Owners of the tiny Poqet PC can now keep up with the rest of the PC using community in terms of word processing at least. The world's best-selling word processor, *WordPerfect* 5 is now available for the midget micro.

It comes as a slot-in ROM card and provides the same pull-down menus, contextual help, thesaurus and spelling-checker as can be found on the version running on full size desktop machines.

• *Poqet:* **WordPerfect** *arrives.*

Not only do you get the ROM card, there are also floppy disks containing the install, printer and utility files. It is recommended that 512K RAM is used.

Price is £425. For more information call 0932 850500. ▩



• *Swift 24-pin: giving 9-pins the needle.*

24-pin winner

Citizen's popular Swift 24 printer has crossed the 100,000 sales barrier in a market which is expanding rapidly in Europe.

The Swift 24 was recently voted European Leisure Awards Printer of the Year and Citizen believes that the Swift range, and 24-pin printers in general, will grab a bigger share of the burgeoning Euro-market.

It calculates that on average 24-pin sales represent about 44 per cent of the printer market in Germany, France and the UK and predicts this should rise to 58 per cent.

"As 24-pin machines began to represent better and better value in comparison to 9-pin machines their share of the market grows," says Citizen sales manager Richard Scotto.

The company plans to use the Swift range as the basis of a new generation of printers due to be launched later this year. "The current Swift range is very strong but we will not rest on our laurels," says Scotto. ▩

• **Cougar Force***: action "packed"*

Agent Cougar

Whether or not you've ever realised it, you are a super agent. At least that is what a new game called *Cougar Force* would have you believe.

As a super agent your task is to defeat a bunch of arch criminals at their island headquarters. The crims defend themselves and their evil doings by use of troops and computer-controlled robots. *Cougar Force* features fist fights, motorbike, hovercraft and boat driving, as well as 3D piloting. It costs £19.99 and is available on the PC, ST and Amiga. ▩

Windows costs too much to run claims Lotus

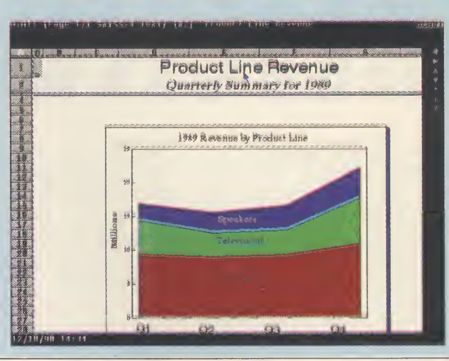
In a move which can be viewed as both serious research and business petulance, Lotus has released figures claiming that Windows-based systems are not as popular, and are more expensive to install, than publicity would suggest.

Lotus, which does not as yet have a full Windows-based conversion for its popular *1-2-3* software, took its figures from recent independently produced UK and US reports. The reason for the release of the figures, according to a spokeswoman for Lotus, was that "some people are taking longer to transfer to Windows than Microsoft would have us believe."

The reports, one from Wharton Information Systems, one from Romtec and one from Peabody Kidder in the US, maintain that only six per cent of the 50 million PCs currently in use are equipped to run Windows. Underlying costs such as installing the 4Mb of memory required to run the environment, as well as the 386 chip needed to run it at optimum pace can run to £1,200, claim the reports.

Rob Ingram, senior product manager at Lotus commented: "All of the reports are not critical of Windows itself, but of the practicality for today's PC users." The approach recommended by the Lotus report is that PC users should wait until chip and memory costs drop.

This could, coincidentally, gel with Lotus' plans for a fully Windows-based version of *1-2-3*. On the likelihood of Windows *1-2-3* spokeswoman Jennifer Bacon said: "We are developing a system, it should be sometime this year." ■



• **1-2-3***: Windows confusion.*

• ***Sugar: jobs loss.***

Amstrad jobs go

Up to 30 jobs may be shed by Amstrad if plans to relocate its distribution arm, Amstrad Sales, are put into practice.

The Staffordshire-based marketing arm which was responsible for £50 million of Amstrad's £250 million UK profits last year, is to be transferred to Essex. According to Amstrad chairman Alan Sugar, the move is to "streamline the company's UK business".

It is expected that Amstrad Sales will move into the warehousing complex in Shoeburyness. Although staff will be offered relocation allowances it is unlikely that more than 60 people will be required to fill roles in the new operation. With 90 staff already on the books of Amstrad Sales this leaves 30 people in the cold. While a number of these people will not wish to leave their Staffordshire homes anyway, the futures of the others is uncertain.

In a move which places greater emphasis on independent dealers, Roy Little, the present general manager of Amstrad Sales, is to concentrate more on this area. This will obviously increase competition with Amstrad's more closely linked outlets.

Whether this is yet another case of the traditional post-festive job cutting is to be seen. ▒

Top games publisher back from the brink after buyout

RETURN TO UK FOR ACTIVISION

Hopes were raised last week that Activision, the once influential but now troubled entertainment software house, is about to be thrust back into mainstream games publishing.

A US business and utilities software publisher has stepped in to buy a major interest in the firm. The Disk Company, well known for such products as *Kind Words* and *Home Office Kit*, has bought a 25 per cent stake in Activision worldwide.

Sources close to Activision in the UK say that steps have already been taken to reverse the streamlining decision taken by Activision US last year.

Within a few months the Reading-based operation has been sliced back so much that its position as one of the most successful and bustling computer games publishers in Europe has completely disappeared. All that is left is a skeleton crew obeying directives from the parent company in the United States.

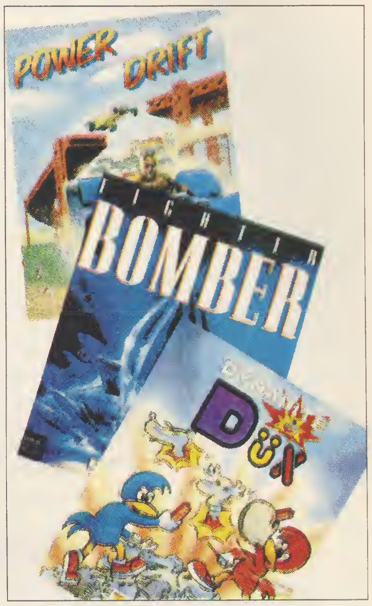
Activision in the US had ignored the success of its European operations and decided to restrict its activities to publishing games for the PC and Nintendo. Activision employees and games players were appaled by a decision which was seen as proof that Activision was concentrating its efforts in the US, where its success has been limited of late.

Nobody at either Activision or The Disk Company was prepared to comment last week, although a document has come to light detailing the new influence's intentions. It stated that "steps designed to effect a change in the management of the company" will be taken to "lead to the solving of the company's problems."

The Disk Company is understood to be talking to major shareholders of the company, who might be persuaded to sell their shares to the new stockholder.

Industry watchers say The Disk Company plans make Activision a big name in leisure and serious software publishing.

Activision is best known for smash hits games such as *Ghostbusters*, *R-Type*, *Super Hang-On*, *Powerdrift and Dynamite Dux*. ▒



• ***Glory days again: Activision is on the way***

Fable manners

How the other leaders view you!

• **Warlord:** ***watch out for those orcs.***

Right ho! It's time to don magical rings, capes and shields in order to set off for the fabled lands of Illuria.

The fabled land of Illuria is the setting for *Warlords*, a new eight player game from Electronic Arts. It is a place where peace treaties between organisations such as the Storm Giants, Orcs of Kor and Horse Lords break down more frequently than Sheffield United's back four.

Your task is to expand your lands and territories from your home castle. You can play computers or other humans, and you can make use of normal soldiers or even heroes. Alliances can be formed with dragons or demons. As you would expect there are copious numbers of Fireswords, and Bows of Eldros – but of course only Heroes can find these. It appears that there are more ways to kill or be killed than you would find in the Legendary Lost Kitchens of Joe's Cafe.

The game is available for the PC or Amiga. Price is £24.99. ▒

Epson printer problem with ST

There is a fault in Epson's new 24-pin printer the LC24-200 which is causing problems with certain Atari ST desktop publishing applications.

It seems that certain programs which use GDOS – such as *EZText* and *Timeworks* – occasionally print out blank spaces or corrupted data. The fault has been traced to a ROM in the printer and Epson is sending out new chips to people who are experiencing the problem. Epson is on 0442 61144. ▒

Fujitsu Creative Faces
Any size
Any size

• *Fujitsu* Faces *facts.*

Better fonts

Fujitsu is to launch a font display enhancement program to operate in the Windows PC environment.

Fujitsu *Creative Faces* will enhance screen display of the normal 35 PostScript fonts. It allows the user to see on screen the way that fonts will be output to the printer.

Fujitsu claims that *Faces* features "true What-You-See-Is-What-You-Get" screen output for Windows programs.

Two configurations are on sale: 13 fonts for £75, 35 fonts for £175. For more information call 081-573 444.

You can read someone's screen from a mile away!

SNOOPING EASY SAYS REPORT

By Dave Golder

Virtually anyone can easily buy the equipment needed to electronically eavesdrop on computers, according to a report in a new book *Computer Security Solutions.*

The report claims that equipment for 'tuning into' other people's computers can be bought or assembled for just £50. It states: "Eavesdropping can be performed by using equipment which is currently available on the open market."

Information on computers can be stolen by picking up electromagnetic radiation emitted from the screen. Until now it has been assumed that this could only be done by professionals with expensive, complicated technology.

But the book reveals that a device which can reconstruct data displayed on a computer screen via these emissions can be built by an amateur in a couple of days for the cost of around £50.

A snoop would need little more than his own computer, an antenna, and the easy-to-assemble gadget.

Information can be picked up from a plastic-cased computer from up to a mile away, or 200 metres away for a metal-cased one. It is even possible to select one computer from a room full, because each emits at a slightly different frequency.

Some frequencies are more secure, but at the moment computer companies do not issue data on the radiation emissions, so consumers don't have the choice of buying a safer computer.

The report suggests a number of ways to combat the problem. Casing computers in bronze- or gold-coated plastic will shield emissions. New buildings could be constructed using hacker-proof materials. Protective glass with a central layer of micromesh and silver flecks on the surface is available at a massive £200 per square metre.

But there are some cheaper precautions which could be taken, such as keeping computers away from windows and moving them to the centre of the building.

Japanese target Cambridge

Toshiba is starting work on a new $1.2 million semiconductor research centre in Cambridge this month.

The company will use the centre in its development and research into the next generation of microprocessor chips. It will also be used for exploration into other new technologies and experiments with semi-conductor-related physics such as the study of electron behaviour.

The new facility will be headed by Professor M Pepper of the Research Centre of Cambridge University, and Toshiba plans to employ researchers from the UK and Europe.

Police investigate man over NASA Scores virus

NASA has asked Dallas police to investigate and prosecute a man suspected of creating a computer virus which infected its equipment.

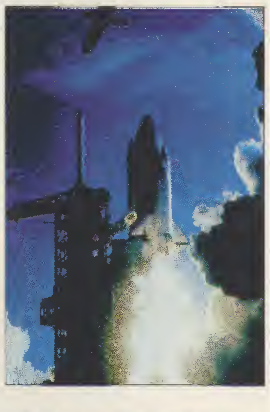
The accused man resigned from Dallas-based Electronic Data Systems Corporation shortly before the virus was first discovered.

In five months the virus, known as Scores, attacked nearly 200 computers at NASA facilities in Washington, Maryland and Florida and also spread via bulletin boards to other government networks and even private systems.

Police suspect the man created Scores because he was displeased with his employers.

Working together, NASA officials and FBI investigators traced the origin of the virus to the Dallas facility. NASA informed Dallas police who then tracked down the suspect.

Owing to a quirk in US law the case is being handled by the Dallas police because federal computer crime statutes require that it be proven that the accused had "intent to harm government computers," while state laws do not. There is therefore a better chance of bringing a prosecution against the man if the case is kept at a local level.



• *NASA: virus attack man traced.*

Sharing the load

Inmos, the UK microprocessor manufacturer, is rumoured to be producing a parallel processing version of the Unix operating system.

The launch of such a system could well lay down the path for a new Unix standard in parallel-processing which might well be adopted by international bodies. This in turn would allow developers to produce faster, and possibly more versatile Unix applications.

The Inmos development comes at a time when both the Open Software Federation and Unix International are working to produce a parallel multi-processing version of the system. The element of competition will certainly speed this process.

Strategic twist to strategy

Impressions is pulling out of the arcade game market and plans to concentrate solely on strategy games.

The year-and-a-half-old company claims the move is a direct result of "market forces" and letters it received from gamers in support of its strategy products, such as *Rorke's Drift*. In stark contrast to other software houses it reckons that over the last year its strategy games have accounted for well over 50 per cent of sales.

"The response from gamers to our strategy games has been phenomenal, with far more praise and sales success than our arcade titles ever achieved," commented boss David Lester.

Impressions' arcade games have never been particularly well received either by the press or public. Lester puts this down to the company's reluctance to spend vast amounts of money on licenses or advertising. Arcade games, he feels, are more appealing when they have some "big name gimmick" to back them up. He also feels that the company had a raw deal from the press.

Forthcoming games include *Feudal Lords*, out this month, which is described as "a unique blend of trading and strategic war-gaming".

Merchant Colony, a sim of colonisation in the 19th Century, will be released in late February. March will see the arrival of the *Rorke's Drift* follow-up *Cohort – fighting for Rome*, while *Africa Korps* comes out in April. All the games will be released on ST and Amiga at £24.99. *Feudal Lords* will also be available for the PC in April.

103 MED.INFANTRY

• Cohort*: Roman military action.*

THE WEEK IN VIEW

Has the bubble burst, or will 1991 be the year for the consumer? Stuart Dinsey, editor of Computer Trade Weekly, looks at what the computer market has on offer for the year to come.

After the partying of 1990 when hardly a week went by without a new games system being launched, planned, rumoured or imported, it's hardly surprising that many of us have woken up to 1991 with a headache.

Consumers will usually be excused for feeling just a little lost in a marketplace that had no fewer than 23 different machines as packs in the retail channels last Christmas from the £10 VCR up to the £999 Amiga 1500. And that is not including the other hand-helds and consoles that were being shipped here from the Far East before anyone could say "grey import".

Even for a market that was supposed to be exploding into mega-sales. (supposedly bucking general retail trends) one can't help feeling that the buyers out there were given just a tad too much choice.

Some machines such as the GX4000 and C64GS had a distinct 'me too' feel about them. The market clogged itself up trying to sell all kinds of new machines when, to be honest, the market could probably have coped with a couple of consoles at the bottom end, the C64, ST and dominant Amiga.

Multiples like Dixons came rushing into the market just like they did in the mid-80's because someone told them there was money to be made, and so the temperature rose another few points as December approached.

Into January and we've already seen price cutting on the High Street and heard whimpers of disappointment from certain corners of the market.

But don't be misled. There may well have been losers out there last year, but there were some winners, and the market overall was very healthy.

Has the bubble burst for the market like it did five or so year ago?

The simplest answer is no, absolutely not. With the marketing muscles of firms such as Nintendo, Sega, Commodore, Atari and Amstrad now fully toned up, consumers would probably be tempted into buying a healthy number of machines every year even if they had the attention holding capabilities of a cabbage. The difficult bit is selling as many as the marketing departments need to make all that spending worthwhile.

But, generally, the machines that the people want are here (and there are more new lines to come, such as Atari's new super console and Nintendo's Famicom) and the market is unquestionably on the up.

The UK leisure market should continue to increase in size over the next few years as improved products are put in front of buyers who are being better educated by TV and press support than ever before.

Being dominant in a huge, growing market is such a lucrative prize that it is really no wonder that there are so many runners taking part in the race at present.

And it's ultimately up to you lot out there, the consumers, to decide just who the winner will be. ■

Express Access

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COMING NEXT THURSDAY

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Fax machines can now happily interface with computers. We examine several models which make the connection.

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The monitor you wear is here! Review next week

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- Front End
- Games Week
- The Console Zone
- Whole Wired World
- Centrefold
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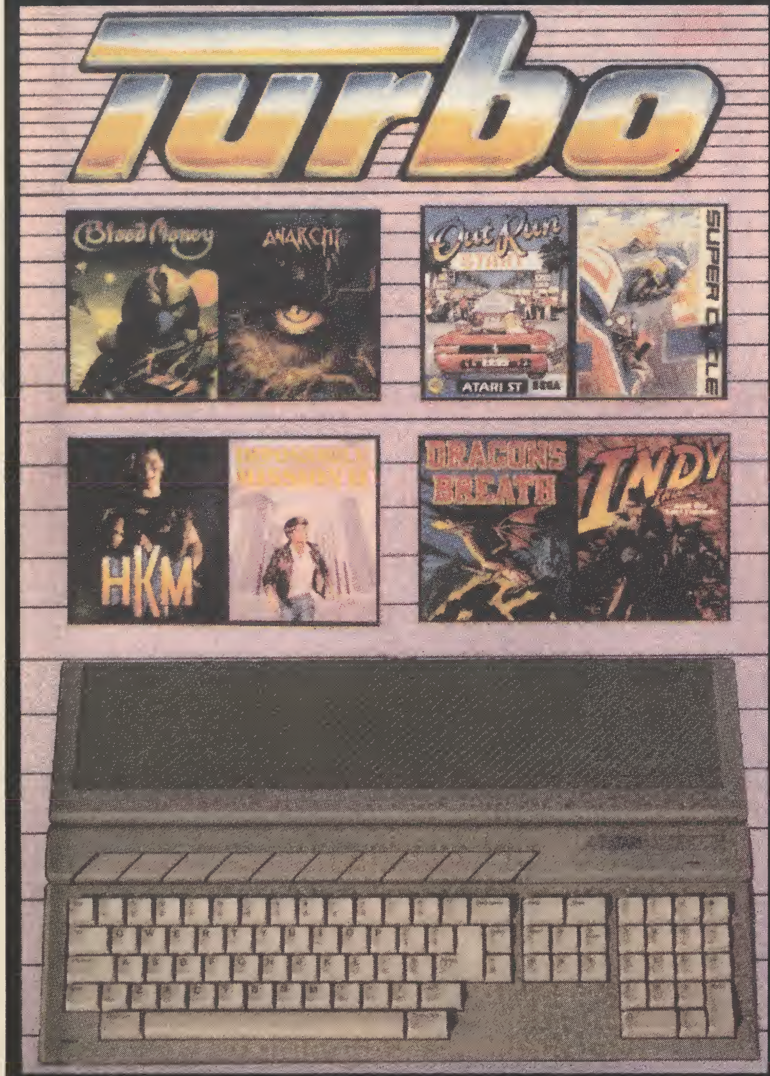
AT YOUR NEWSAGENT ON THE 24th

ATARI ST

"E" & "FM"



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■ Mac Emulation

One of your correspondents asked how to use the PD Mac emulator for his ST. (*Ages and ages ago, but your letter got lost in transit somewhere along the line – H F-W*) Sorry, there ain't no such animal: for 'PD', please read 'illegal pirate', OK?

There are legitimate Macintosh emulators (*Spectre* and *Aladin*) that use clever software, plus genuine Mac firmware in a ROM cartridge. There are also, I'm afraid, illegal ones that use pirated copies of the clever software, plus cracked Macintosh firmware on disk. These are occasionally on offer from PD libraries (not mine) who should know better, and other sources of dodgy software.

You use them by running the program, pressing SPACE at the title screen, and then when an alert box appears, inserting a disk with a pirated copy of the Mac System/Finder software. If the emulator is a pirated copy of *Spectre* then this disk must be in *Spectre* format, and conversely for pirated copies of *Aladin*. It is probably supplied as part of the emulator package.

Arguably, this is a harmless activity, as these emulators aren't actually usable. (As reported in your news columns, one of them displays an anti-piracy message upon crashing.) Neither Apple nor the genuine emulators are losing any sales – both may be benefitting from the distribution of 'demo versions'. But I wouldn't like to argue this in court against Apple's notoriously keen lawyers.

Martyn Dryden, The South West Software Library, PO Box 562, Wimborne, Dorset BH21 2YD

To make up for the rude delay in running your 'legal, decent and truthful' missive Martyn, I've just given you a free plug for your library. My next correspondent could have done well to heed your advice...

H F-W

■ Cautionary tale

I have spent the last six weeks trying to get a PD Mac emulator to work. I suspect the simple answer is – forget it! If you want a working emulator, buy the real thing. I was able to buy a second-hand copy of *Aladin* from a real gent for £75.

The first problem is that you need the Mac ROMs from a 128 or 512, and this, of course, entails spending money – possibly about £40. There is a version kicking about that uses Mac ROM images, but this is, of course, an infringement of Apple's copyright.

A close friend reliably informs me that even if you feed with the necessary Finder and System files, the best you will get out of it is the 'Welcome to Macintosh' message. Was it only ever supposed to be a demo?

The ST will not read Mac disks directly without additional hardware – more money. All programs have to be ported across via a serial lead, and many more still need to be patched to work correctly. I did get around the serial lead to some extent by getting hold of a Mac PD utility called *UDMS* which reads a Mac disk sector by sector and saves it as a series of files. Originally, it was written to send exact copies of Mac disks via a modem. What I did was to save these to a MS-DOS format disk, using *Apple File Exchange* on a Mac IIcx. The Atari can read 3.5-inch MS-DOS 720K disks directly. I then decoded the file format after much head scratching and wrote the sectors back as a Magic format disk, which incidentally is not the same as the *Aladin* format. I could then run some programs from the transferred disk, but only had partial success.

So, as I said, unless you want to spend some serious money, forget emulating the Mac on the ST. You'll save yourself many sleepless nights into the bargain. So far I have spent nearly £170 to get a real working copy of *Aladin*, about £35 of which was wasted messing about with a 'free' version.

Ian Ferguson, Carlisle, Cumbria

Now the Classic has arrived – even if there is a long queue to get one – anyone with a serious interest in running Mac software might as well buy the real thing. Not everyone is prepared to forego the pleasures of running a luxury car in favour of owning a Mac IIfx, like me...

H F-W

■ Brilliant repair

After having some major repair work – some £240-worth – done on my Amiga, the internal floppy drive developed a fault, thus preventing any further disk accesses. I contacted Commodore's National Repair Centre in Peterborough (having seen its advertisement in your sister publication, *Amiga Format*). They assured me that they could fix the fault and return it to me within a fortnight or so.

I sent my Amiga via Securicor on the Monday afternoon, and it was scheduled to arrive at the National Repair Centre on the following morning. Rather than a two-week wait, in fact the computer was returned to me, fully repaired on the Friday afternoon of the same week – a turnaround time of under three days!

On opening the covering letter, I found to my utter astonishment and disbelief that the National Repair Centre had in three days: replaced the top and bottom covers (grimy), replaced the keyboard (some of the keys were beggинning to stick), replaced the mouse (grimy), replaced the power supply unit (damaged insulation cable – something I was unaware of, which could have had serious repercussions at a later date), replaced the internal floppy drive with a brand new and much quieter unit (having a yellow LED instead of the older red LED), and had repaired the mother board and the RAM expansion pack.

In other words, they had virtually rebuilt the computer – all for an extremely reasonable charge of £49.95! – which also included the cost of return carriage. The National Repair Centre is also currently offering a two-year extended warranty on all parts and labour for a further £49.95, an offer of which I definitely intend to take advantage.

I have absolutely no hesitation whatsoever in recommending to your readership, the services of the National Repair Centre, not only for its fantastic speed and quality of service, but also for its price!

Alan Smith, Walsall, West Midlands

Well, that should please 'em up at NRC! I just hope everyone doesn't expect a complete rebuild for under 50 quid...

H F-W

■ Lonely at the top...

What a wonderful machine the Amiga is, and being an Amiga owner is just dandy.... or is it ? If you use the 500, you're top of the heap, B2000 owners are close behind, soon to be joined by the new 1500 owners, and even 1000 owners get a look in.

I own a Freak-Amiga. The vast majority of Amiga games software won't run on it. There is very little news about it. Most software and hardware manufacturers don't know or care if their products are compatible with it, and despite the amount of money I've spent, not even Commodore will give me technical help! All in all there is very little news, software, or hardware dedicated to my Amiga. And a User Group? Not a chance!

I have just realised that I must be the only person in the world who would like to get into serious sound and graphics and bought this Amiga thinking it was 'the business'. Well, it is the business, but my machine, splendid though it is, seems destined to fade into obscurity (if it ever got out of it!), never having had its enormous potential realised!

And what is this "Freak Amiga" I bought? Why the one every owner aspires to – the 25MHz lOOMb Amiga 3000 of course. Somebody talk to me!

R Harley, Shoreham by Sea, Sussex

PS. To Jay Lee (*Express 113*), I'm not knocking TT desktop, but check out Kickstart 2.01 and Workbench 2.0, for a professional GUI, with proper (independent) multi-tasking! Let's not get into an argument.

Watch out for the complete Amiga supplement we will be running in about six week's time Mr H. Maybe we will answer your prayers...

Meanwhile, my next correspondents have more to add to the operating system debate that opened up the week before last.

H F-W

■ Unbiased OS opinion?

I feel that I must write and congratulate Mr Gary Thomson (*Express 113*) on one of the most unbiased, balanced and objective letters that have graced your letters pages recently.

Although GT describes himself as 'a programmer', the sort of image that sprang to my mind was that of the 'rebel' demo coder, frantically trying to win points against the Amiga owners. Ho hum.

GT's opening salvo has no effect apart from shooting himself magnificently in the foot. 'Vile and disgusting' hardly counts as an intelligent and reasoned comment on the strengths and weaknesses of the Amiga OS.

I partially agree with some of GT's points. From a beginner's point of view, Intuition seems incredibly verbose, and to be frank, you need to put a lot of work in before things become clear. But once this has been done (and it takes some time, so be patient) the power begins to shine through.

As for the point about 'Use the OS only, never access hardware direct'. Ho, ho! Use your loaf, GT! If quick code is all that you desire, lock the OS out and code demos/games to your heart's content.

I am not slagging GEM or RISCOS. I guess I am biased (OK! So I own an Amiga) but I am not really on anyone's side. I program the Amiga because I bought one. If I had bought an Archie (for three times as much as I paid for the Amiga) then I would program an Archie.

One last point. If GT can quote ANY Amiga OS call that takes superfluous parameters, then I'll give him the fiver *NCE* pays for printing this letter.

Richard Keeble, Ipswich, Suffolk

You're being a bit presumptive about that fiver Richard... And a bit cynical, with your opening comments unless I'm much mistaken. Still, good valuable arguments. Let's have more of them, rather than aimless 'MCIBTYC' rantings.

H F-W

■ Genuine agreement...

I would like to say that I agree with everything that Mr Tomlinson says in *Express 113* – the Amiga is a difficult and horrible machine to program. Just try using the Screen ED and BASIC supplied with the machine: uck!

OK, so the Amiga may now have 4096 colours in 640x512 resolution, but how many software companies are going to use it? Digiview 4's display program did, but as soon as you tried to do something like removing the disk, the picture vanished. Useless!

The Amiga runs at only 7.14 MHz because of its chip set – accelerator boards are expensive and will make little difference. A standard Amiga is very slow indeed.

Mark Bowles, Kirdford, W Sussex

There's more to computer power than pure processor speed measured in MHz, you know, Mark. Maybe you have been lulled into believing all you read about benchmarks and so on...

H F-W

■ Looking for more PAL

So the Amiga sold well last year, especially in Britain. With that last point in mind, surely the user base in Britain is large enough now for the software publishers to produce more games that use the full PAL screen? The computing press could also help to nudge this process along if they simply wrote clearly alongside each review whether the software used the full PAL screen or not. I do think it detracts from the final product having a blank black strip on the screen.

On the point of some of the consoles not selling so well. 'What a surprise' I don't think. Just because a product does well in America (consoles/cable TV) doesn't mean it will do well in Britain (computers/video) as certain products, like the examples given, tend to cancel each other out.

Alan Foster, Southampton

Is it just the games written on and ported from the ST that don't use the full PAL screen on the Amiga, or am I missing something? Please enlighten me, oh readers and software houses.

H F-W

■ Standards slipping?

After reading your two-week special on software theft, I feel concerned that the software industry is now developing tunnel vision, and blaming all cases of poor sales of a game on piracy.

In my own case, I find I hardly ever buy computer games these days (except for the odd bargain offer) because I have been so disappointed with the general standard of what's on offer. I'm sure I can't be alone in this, and if so, no wonder sales are poor.

I can see three problems:

(i) HACKNEYED GAMES. The market must surely be saturated now with horizontally-scrolling beat-'em-ups and driving games. How many people want yet another one, especially at £25 a throw?

(ii) HIGH PRICES. It's pointless debating why prices are high, the fact is they are high, and the value is not commensurate. You can buy vintage champagne for less than the price of a typical l6-bit game. It's one thing to charge high prices for some enormous RPG type game, but I can't see that many people are able to pay that sort of money for some puzzle game to while away the odd half-hour.

(iii) POOR STANDARDS. Games with bugs; games with compatibility problems; games that do not take proper advantage of the machine they are running on; poor documentation; clumsy design features that should have been spotted at the playtesting stage; and last, but by no means least, user-hostile copy protection systems. All too common, the lot of them.

High prices demand high standards, and if the public don't get the standards they expect, of course they will stop buying these games.

I fear that the software houses are so hell-bent on the piracy issue, that they are neglecting the wants and needs of the honest customers who actually pay the programmers' wages at the end of the day. However much protection they slap on their disks, they are never going to make money out of the thieves. And if they continue to treat the buying public with their current disdain, it's no wonder that sales will drop.

Put it like this – it's like printing every issue of *NCE* in purple ink on red paper to stop people illicitly photocopying the articles, and then putting the price up to £9.99 because reduced sales puts up the unit price. It's no way to run a business!

Roger Musson, Edinburgh

A bottle of vintage champagne would be very lucky to last half-an-hour in the H F-W household.

H F-W

■ Our older readers...

I must write to let you know of the fantastic response I have to my letter which you printed in *Express* 110 concerning the over 50's. So far, I have had 28 letters – and it came as a nice surprise to find that there are as many old 'uns as young 'uns in the computing world. I feel that we now have a case for a column for the over 50's.

C A Harris, Headington, Oxford.

Glad to hear the appeal went so well. And I've had a fair few missives from retired owners myself. Like this next (and last) one...

H F-W

■ On-line love...

Well, if I had known you were interested in people's ages and wanted to hear from them, I'd have written to you before! Good luck to Mr Barnes and may his brain never be addled.

I'm approaching 66 and am retired. I was a science teacher for 20 years and then a programmer from 1971, at which time we used machine code punched in decimal on paper tape. The punch produced the binary translation. Then we got a water-cooled Molecular 18 minicomputer with an excellent operating system and assembler. It could multi-task and had all of 32K of memory. All memory dumps were in octal.

I programmed our first micro – a CBM Pet – in 1980, which was when I used a floppy disk for the first time. I joined Compunet with my CBM64 in August 1988, which I never regretted, for I made many wonderful friends of all ages – including the woman I love. And now I'm learning C on my Amiga 500.

I find computing a great mental stimulus that never bores me, and meeting Cnet friends has taken years off my age. They're people who have purpose in life, and many of them are not only extremely talented but also amusing company. There's never a dull moment...

John Marchant, Bedford

Glad to hear you're having so much success with your computer John. I have passed a small pile of similar letters on to our illustrious editor, who I believe is considering a real beginners' course for the near future – that's what most of our older readers are really after it seems.

Well, that's about a wrap for another week of vibrant opinion-exchanging. I'm off for a bit of *Sim City* on the old IIfx.

H F-W

MAIL SHORTS

■ Art freak...

Can I be the only person to put in print that I think *Photon Paint II* is better than *DPaint III*?

Peter Hayes, York

Well, I suppose so. For all the good that it will do you... H F-W

AS SEEN ON SCREEN

■ TV script at Express!

As I was reading *Express* 111/112 I cast my eye to the bottom of page four where you asked Bob Hay of FAST 'What about programmers... we know that some turn their talents to dubious activities'. Do I see... yes! a direct quote from a recent TV program, *House of Cards*. Bob said: "...I couldn't possibly comment," which is what the would-be Prime Minister said in the TV show!

Ian Hurst, Wigan

Fair enough Ian. For bringing a new twist to TV spotting, you win a fiver!

But I want more pictures for these pages, and I'm prepared to pay, fiver-hounds. Send in a letter with a piccy and you much improve your chances of collecting a spot of dosh.

H F-W

■ Teacher's pet

The recent FAST adverts I have seen, shoot themselves in the foot – encouraging pupils to shop teachers for piracy because they don't like the lesson is a bit heavy.

'Anon'

Come come. How can an advert shoot itself in the foot? By the way, look out for a new series of FAST ads, coming soon to a magazine near you. H F-W

■ American chums sought

I would like to get in touch with an Amiga user group in the USA and am wondering if you could provide me with an address to write to.

Bob Attwood, Burnham-on-Sea

We don't have the address of a user group as such, but a chap called John Rydell runs a disk-based fanzine called *Amy Today* and he might be able to help. You can reach him at 640 Willowglen Road, Santa Barbara, CA 93105. H F-W

■ A foodie writes...

Coffee and disks do not mix, which is why I like to make a backup. I just want confidence that a badly-aimed bowl of tinned peaches won't zap the aliens for good. Will software houses promise to replace caffienated disks free? No!

Dylan Harris, Bedford

ADDING MO

We continue our look at upgrading your machine with a survey of some of the handier peripherals which are on offer.

The standard machine which arrives in the box can do most computing tasks pretty well; spreadsheets, databases and word processors are no problem. But if you add peripherals to your computer then a whole new range of possibilities is opened up. You can get printed output of your work, control musical instruments, digitise sound, pictures and video and communicate with other computers. This week we make a survey of some of the peripherals on offer for the 16-bit computers.

PRINTERS

One of the first peripherals most people buy is a printer. The ability to have a hard copy of your work makes the more serious applications of a computer useful. Obviously word processing without a printer is difficult. Printers come in several varieties depending on the technology they use to lay ink on paper, with prices starting at just over £100 and going up to many thousands of pounds. The sort of printer you buy depends on your needs and budget.

The most common type of printer is the dot-matrix model. It is so named because when it prints letters or graphics it uses a grid (matrix) of dots to produce the shapes. Dot-matrix printers work by punching tiny pins onto an inked ribbon which presses on the paper. The quality of the text these printers produce depends on the number of pins and the number of times the print head passes over each bit of paper.

The cheapest printers have nine pins and have the option of passing twice over the paper to produce what is called 'near letter quality'. This is perfectly adequate for most purposes, including most people's letter writing. A single pass of the head is called 'draft' quality, and is much quicker but you wouldn't let it out of the house because of the faint and excessively dotty text.

More expensive printers have 24 pins and can make up to three passes producing excellent quality indistinguishable from a typewriter without the aid of a magnifying glass. If the presentation of your documents is important then it is worth paying the extra £100-£200 these printers cost.

Many dot-matrix printers give you the option of printing in colour. This is done using a special ribbon containing three coloured inks – cyan (blue), magenta (pink) and yellow. These colours can be layered on top of one another to produce other colours. Don't expect the results to be brilliant, however; since most of these printers can only manage eight colours and the results are often smeared and pale looking. High quality colour printing is beyond almost everyone's price range, so it may well be the best you can get!

For text only printing with extremely high quality at low cost daisywheel printers are an option worth investigating. Basically a daisywheel printer is a typewriter wired up to a computer. Plastic wheels containing the letters are rotated until the correct letter is in place then struck through a ribbon onto paper. The advantage is quality indistinguishable from real typing; the problem is the lack of flexibility. You cannot print any graphics, you cannot change typeface – even to italic – without physically changing the wheel in the machine, and many software packages do not support daisywheels properly. If your software lists 'Diablo' as one of the printers you can use then daisywheels will work fine, otherwise expect problems.

The combination of flexibility and high quality can be achieved, but of course only at a price. The printers which do this are laser printers. They work in much the same way as photocopiers, except the computer tells them what to print instead. They fall into three categories: dedicated printers only work with one model of computer but are cheap, LaserJet compatibles work with any machine, are relatively affordable from £900, but limited in some of their text and graphics abilities, and PostScript printers, which are as flexible as they come, but the most expensive to buy at £1,800 and up.

Wiring up a printer to the computer is usually simple enough. Most connect to the parallel port, so called because it transmits the eight bits which make up a byte all at once (in parallel) rather than one at a time (serially). Some connect to the serial port; if you have the choice use the parallel; it's faster. The parallel ports connector is often known as a Centronics port, and the cabling is fairly standard. The problems come with getting the software you use to recognise the printer it is attached to. To make this easier several standards have emerged; for dot-matrix printers it's the Epson FX-80, for daisywheels the Diablo and for lasers the Hewlett-Packard LaserJet and Apple LaserWriter. If your software supports any of these you will be able to get the printer going – although you may have to throw a few switches inside the printer. Most printers, however, offer more features than the standards, such as more typefaces or two-way printing. To access these you'll need a special printer driver for your printer – check that one is available for the software you use before buying.

SOUND SAMPLERS

Sound samplers are plug-in devices which allow you to record sound into the memory of your computer, where it can be edited and replayed. They work using 'analogue to digital converter' which takes the electrical input from a microphone or a Walkman and turns it into a stream of numbers that the computer can understand.

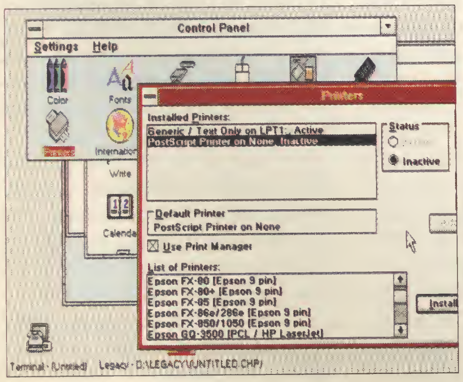
Samplers have two parts; the hardware to convert the signal into a digital form, and the software to deal with it once it's in there. One word of warning – no cheap sound sampler is going to turn you into Stock, Aitken or, god forbid, Waterman. The sound quality from most of these devices is not good. They work at 12-bits per sample (that is the number the signal is converted into can vary from 0 to 4,096), whereas a CD player operates at 16-bits. Four bits might not sound very much, but that means that these samplers are 16 times less accurate, and that's even before you allow for the fact that they take samples many times less often per second than a CD does before you even start thinking about oversampling. And on top of that – most of them are mono.

That said, sampling is great fun. Once you have the sound in the computer you can edit it – reverse it, change the speed, weld bits together, make loops, alter the volume – and with some samplers you can make a primitive synth by assigning keys on the keyboard to particular sounds, or the same sound replayed at different pitches. Sounds can be saved to disk and incorporated into your own programs if you want.

If you have an Amiga you have a built-in advantage when it comes to sampling, but there are excellent devices available for the ST as well. The PC is a bit left behind when it comes to sound, but add-on cards make it possible.

SOUND CARDS

It is possible to overcome many of the PC's sound limitations by adding a sound card. These cards are miniature synthesisers on a card which fits into one of the expansion slots in the machine. With one installed, most PC games can give out as many squeaks and squawks as an ST or Amiga. There are several models to choose from, which go right up to full-blown professional synthesisers, but the clear winner in terms of software compatibility is the AdLib card, which offers about the same sound quality as an ST, although you'll need a pair of headphones or a small amplifier and speakers to hear it.



Installed Printers:
Generic / Text Only on LPT1:, Active
PostScript Printer on None, Inactive

● Inactive

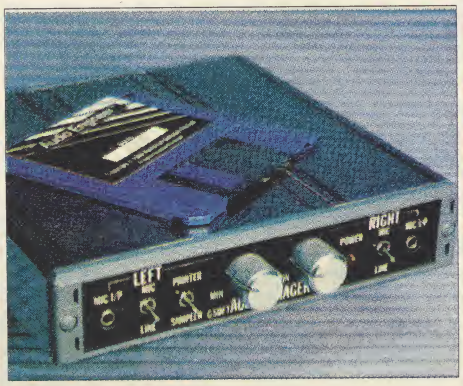
Default Printer
PostScript Printer on None

☒ Use Print Manager

List of Printers:
Epson FX-80 [Epson 9 pin]
Epson FX-80+ [Epson 9 pin]
Epson FX-85 [Epson 9 pin]
Epson FX-86e/286e [Epson 9 pin]
Epson FX-850/1050 [Epson 9 pin]
Epson GQ-3500 [PCL / HP LaserJet]

Terminal - (Untitled) Legacy - D:\LEGACY\UNTITLED.CHP

• *Microsoft Windows supports a variety of Epson printers.*



• *Samplers - a serious tool for endless fun*

• *Scanners can add that extra touch to DTP documents*

ORE VALUE

MIDI INTERFACES

Still on the music front, you can add a MIDI (Musical Instrument Digital Interface) which will let you control a synthesiser with the appropriate software. ST owners may smugly skip this section as their machines have built-in MIDI circuitry. MIDI synthesisers can be identified by the round DIN sockets on the back panel, a MIDI keyboard can be played by the computer, or the computer can act as a sort of digital tape recorder storing the sequence of keys which you play which can be edited before being played back. Sequences of notes can be built up (hence sequencer – the name for the MIDI software) and played on several synthesisers at once. Typically a computer can control 16 synths.

Although it is possible to get into MIDI cheaply these days – interfaces cost around £50, cheap MIDI keyboards £100 and PD software is available – beware, MIDI is addictive. It is also fearsomely complex, and the software to let you use it is not simple. Allow for many long weeks of struggling with MIDI before you start to get good results, but it's worth it when you do. MIDI brings a new meaning to a 'one man band'! In two week's time *Express* will include a special 32-page supplement on computer music – don't miss it.

DISK DUPLICATORS

Disk duplicators and memory 'freezers' are very popular peripherals, but their popularity is extremely controversial. The reason they are controversial is simple: these devices, such as Blitz, Multiface and Action Replay, allow some copy-protected games to be copied, and also allow crackers to get inside a game to remove the copy-protection altogether. They also have legitimate uses; debugging programs, capturing screen images (most of the ST and Amiga screens in *Express* are obtained with them) and making fast back-ups. As with home tape decks, there are dodgy uses for these devices, and many software companies would like to see them banned but that's unlikely to happen. If the facilities which these items offer appeal to you then get one, but remember to use it responsibly.

SCANNERS

Hand-held scanners are devices which take images on paper and convert the into graphics files which art programs can use. If you can't draw they are a godsend; you just find what you want, run the scanner over it then tidy it up on screen. Hand scanners are best with black and white line drawings. Photographs and other continuous tone images are handled well only by the most expensive scanners which support greyscales instead of just black or white.

Another use of scanners is optical character recognition (OCR). Using this it is possible to scan some typewritten text and special software converts it not into a graphics file, but a word processor file, saving you from having to retype it! The efficiency with which OCR software does it varies widely, but with the PC and Mac scanner The Typist can manage 99 per cent accuracy with neatly typed text.

Colour scanners are just beginning to appear – the pictures on this page were produced with the £550 Sharp JX-100. This technology opens up a lot of exiting possibilities, especially as this scanner can attach to an Amiga as well as PCs and Macs.

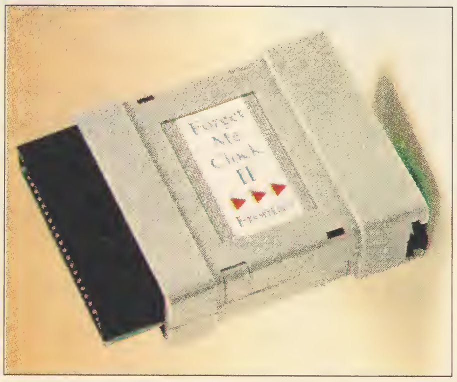
DIGITISERS

Digitisers take the input from a videotape recorder or video camera and capture it in much the same way as a sound sampler does. The images produced can then be touched up in graphics programs. The technology is expensive and, in many cases, not of very high quality. Until the advent of the colour scanner, however, it was the only way to get colour images into a computer. Digitisers are often used in combination with genlocks – devices which allow a computer's graphics and a video signal to be combined into one and then recorded or displayed. With a digitiser, graphics software, a genlock and of course a VCR you have all you need to produce quite sophisticated videos – indeed some recent pop videos were made using an Amiga or an Archimedes. The ST lags behind in this area because a design quirk made it very difficult to build a genlock for the machine, although this has now been dealt with. PC systems are also available, such as Vidi-PC, but the most sophisticated hardware and software is for high end Macintoshes. The imminent arrival of the Amiga Video Toaster might change that – we'll report when we get one for review.

MODEMS

Modems – short for modulator/demodulators – are units which convert digital computer signals into sound which can be sent down a telephone line. At the other end another modem translates the sound back into digital signals, so two computers can communicate as if they were linked by a wire in the same room.

• Use a Modem to get on-line to hundreds of free programs.



• Buy a clock chip to save the hassle of setting the time.

SHOPPING LISTS

Five essential add-ons for your machine.

AMIGA
1. 512K extra memory
2. Second disk drive
3. Colour monitor
4. Sound sampler
5. MIDI interface

ATARI ST
1. Hard disk drive
2. Mono monitor
3. Dot-matrix printer
4. Hand scanner
5. Sound Sampler

PC
1. Mouse
2. Sound card
3. Joystick and card
4. 2Mb memory
5. Hard disk

There is a lot more to modems and comms (the name for computer communications) than that. As well as directly linking two computers, on-line services are available which allow you to look up information, send faxes, copy programs and generally communicate with other users. Comms enthusiasts spend hours on-line, chatting to friends via computer – it's like a national CB network. In the States everything's taken a lot more seriously – you can even order your groceries via modem – but here it's still largely a hobby for the moment.

To get involved you need a modem, which plugs into the serial port and you'll also need some comms software. The technical aspects of comms can be quite daunting at first, so it's worth investing in some sophisticated software which shields you from the raw technology. If you like getting you hands dirty, however, there's plenty of top notch software in the public domain. When it comes to choosing a modem, the most important factor is speed, measured in baud. The cheapest run at 300 baud, which aside from being agonisingly sluggish, will push up your telephone bills as everything takes much longer. Other speeds are 1,200, 2,400 and 9,600.

ODDS AND ENDS

Glance through Shopping Express and you'll find dozens of little add-ons designed to make your computing life easier. One which is certainly worth the money is a clock. All computers have a clock built in, but most computers require you to reset it every time you switch on. This is rather tedious but needs to be done, so that the dates and times in programs and on file time stamps are right. You can avoid all that resetting by getting a battery-backed clock which remembers the time even when you switch off your computer. In the PC world these take the form of add-on cards for XTs (ATs have a clock built-in), Amiga clocks are often built-in to memory expansion boards, and ST models often fit in the cartridge port.

Other add ons include graphics tablets which let you draw directly into the computer, trackballs which are a space saving mouse replacement, and even magnifying glasses which can be attached to the side of the mouse. That's before you start on furry animals which weld around your monitor. Have fun upgrading your machine! ■

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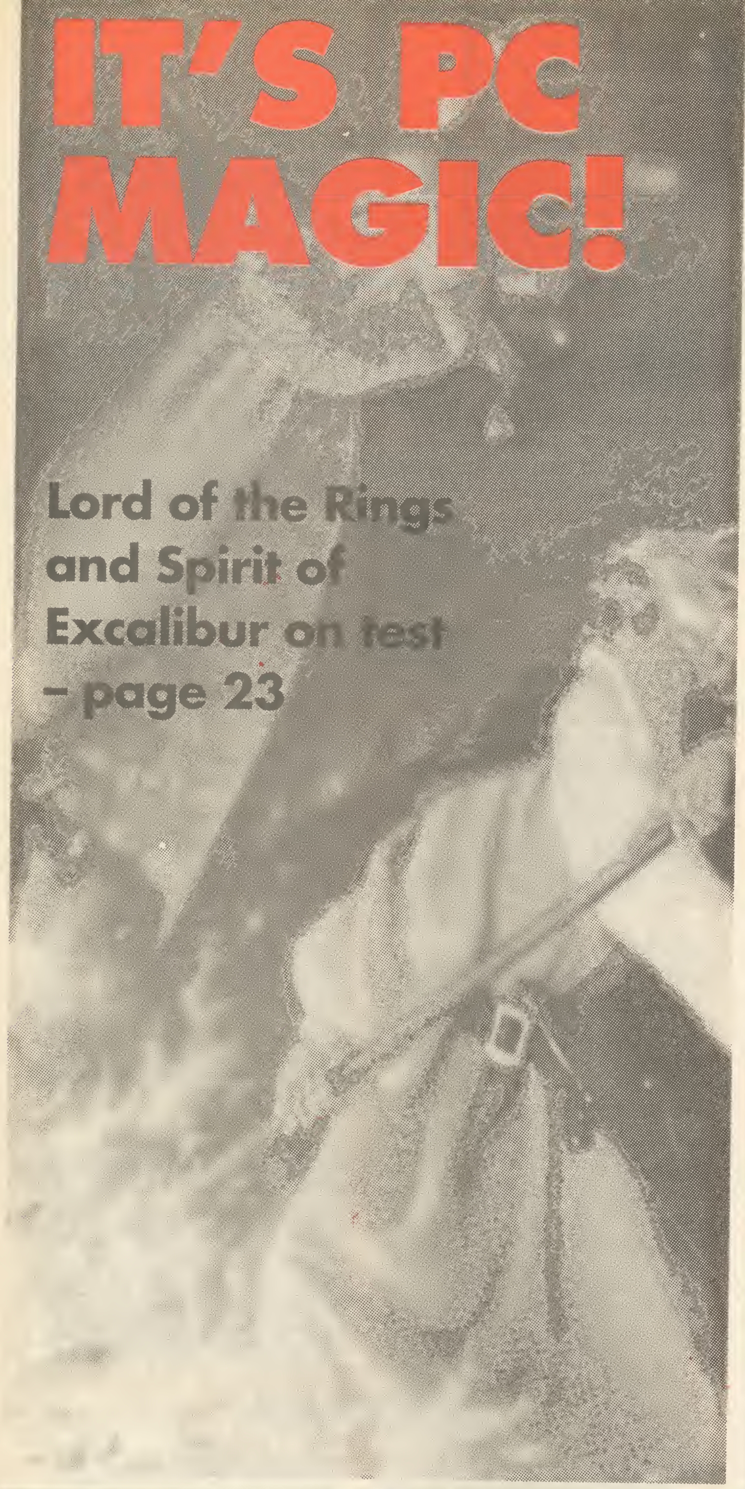
What computer do you currently use?........................
....
What software do you currently use?..........................
....
What computer equipment will you require in the next six months?...
....



IT'S PC MAGIC!

Lord of the Rings and Spirit of Excalibur on test – page 23

SHOPPING EXPRESS

THE VALUE-PACKED GUIDE TO YOUR MACHINE AND MORE

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	8533 & 8832	(0.42 dp)	£80
14" VGA Mono	7BM 749	Paper White	£60

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CGA Colour - DIN & SCART sockets;
VGA Mono - 15pin D shell (plug).

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Macintosh

WHINGE TIME

Some bits of Apple's System are really annoying. For instance, when I want to copy the entire contents of a floppy disk on to my hard disk, I can just drag the floppy icon to the hard disk icon, and – after informing me that the disks are of different types, which I knew already – the Mac does the business.

But why oh why can't I drag the disk icon into the folder where I want it to reside? If I try to do that, I'm told that "Disks can only be copied onto other disks". Great. Thanks. Instead, I have to drag the disk icon to the root directory of the hard disk and then move the resulting folder to the right place. There's bound to be a perfectly reasonable explanation for this... but I'm damned if I can think of one.

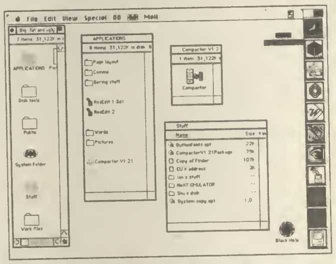
I'm thinking of collecting a 'pet hates' list of bits of the Mac operating system that appear to have been designed out of sheer bloody mindedness. If you've any contributions, drop me a line.

DIY NEXT

Tim 'Smith' Smith is the richest journalist in the world. He must be, because he's the only one of us in Future Towers who can afford a colour NeXT Portable – although, as avid readers of Centrefold will no doubt be aware, it was stolen from him while he was in the States a few months ago. (Some of us consider that Tim's always in a State, but that's another matter...)

Anyroad up, although there isn't much hope for me being able to afford a NeXT in the near future, there is a way that I can make my Mac pretend that it's a Jobs machine. The utility in question is called *Black Box*, and it was written by an American called Andrew Welch, who asks a $15 shareware fee if you use it. To install the full business, you will need a copy of *ResEdit* (see Mac columns passim). Installation involves copying a couple of resources into the Finder, and a couple into the System, so you'll need nerves of steel, although it really isn't that hard. Then drop a couple of files into the System folder, restart and hey presto.

One of the files is an INIT called Main WDEF (not to be confused with the virus WDEF), which alters the look of your windows (see the screengrab on this page). It can be used even if the rest of *Black Box* isn't present, for those who get bored with the look of the standard Apple windows. The other INIT is the *Black Box* software itself, which puts a 'docking bay' on the right hand side of your screen and adds a number of other useful functions.



• Black Box – now everyone can pretend to be as rich as Tim Smith!

While you can still use your Macintosh as normal (with the loss of a bit of the screen for the docking bay), you'll soon find that the extras provided by *Black Box* are well worth while. After installing applications in the docking bay (which is a trivial task – just tell the computer that you want to do so and it happens automatically), clicking on the icon will launch the application. DAs can

POSTCARD FROM AMERICA

Is there anything new under the Macintosh sun? Plenty, as we will see at the upcoming Macworld Exposition. But the same old non-stories keep poking their heads through the sand, especially rumours of clones.

Last September, I was almost knocked to the floor by a frantic tipster with news of a Macintosh clone. It was a card for MS-DOS computers, produced by a local company, that could run Macintosh programs. The price was unknown, but less than $1000. I was underwhelmed.

There have been reports of clones every six months since the Mac was born in 1984. They've been reported in Hong Kong, Brazil, and Hungary. The F.B.I. has almost had to build a branch office in Apple headquarters to handle the traffic. How likely was a legal clone going to appear in the shadow of the fountainhead? Anything is possible in the Valley, but I wasn't going to hold my breath.

I called supposed clone-meisters, Hydra Systems, and asked a few questions. The sales representative developed a quick case of speech impediment when he discovered that I knew anything about the Macintosh. They even tried the old we're-real-busy-now-call back-later dodge. I finally force-phoned my way into the back room, and talked to a t-shirted technician.

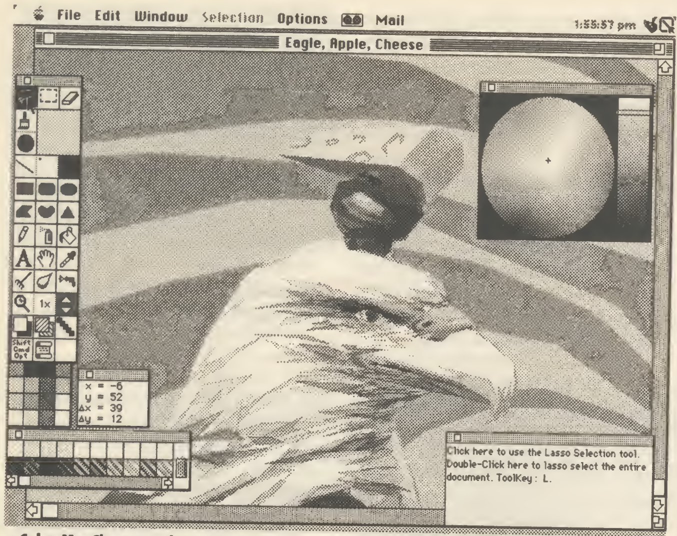
The Hydra board is an emulator, not a clone. It requires the buyer to purchase Macintosh 128K ROMs separately, and install them on the board. The device can't use the PC's memory, and needs its own RAM.

The market in used ROMs has been shrinking lately. There are emulators for Amiga and Atari computers chewing up the supply. Even worse was the recent conviction of a ROM bootlegger. The stiff sentence handed out may dissuade other would be lawbreakers from supplying illegal chip sets. Hydra Systems is supposedly developing its own Mac-compatible ROM to improve the supply. Good luck.

Will PC users to want to spend cash on a hardware hack? The going price of a used SE with a 20Mb drive is the same as the Hydra board and grey market ROMs.

Marvel comics fans will remember Hydra as the group of fiendish criminals that populated the Nick Fury series in the 1960s. Cut off one head and the emulations will continue!

David Morgenstern



x = -6
y = 52
Δx = 39
Δy = 12

Click here to use the Lasso Selection tool. Double-Click here to lasso select the entire document. ToolKey : L.

• **Color MacCheese** – ***cheesy it ain't!***

also be installed in a similar way, so you may find that you don't ever use the Apple menu again!

The system also adds a screen saver (of the 'shooting star' variety), a screen capture utility (the screen grab on this page was produced using it), a clock (either analogue or digital – it's up to you) and a 'recover from System crash' option, which frequently allows you to hit 'continue' when you get the dreaded System Error message, rather than having to restart.

Black Box works on all the Macs I've tried it on; for people with nine inch screens, the icons on the docking bay can be made smaller to take up less of the screen. I'd recommend anyone to purchase a copy; after a few days' use, you'll wonder how you ever managed without it!

Black Box is available from most shareware suppliers, including Translatum International – telephone 0352 710276 and ask for disk 2140, "Mark III Shareware", of the Educorp collection. It should cost you about £8 (plus, of course, the $15 shareware fee).

CHEESY PROGRAM

I've recently been playing with a rather neat colour paint package. It's called *Color MacCheese*, and costs a meagre £99. But despite the dodgy name (which came about because, according to the manual, the designers wanted to create 'a cheesy little program') and despite the fact that it's a fraction of the price of most other colour paint packages on the market, it's actually rather whizzy.

It will work in all modes from black-and-white to 32-bit colour for those rich enough to be able to afford a colour monitor (I used it on a Radius 19-inch, though I'm not one to brag) and has virtually every feature that anyone could possibly want.

One great idea is the 'help' window, which appears automatically when you start up the program. Text inside the window changes to tell you what different menu options and tools do, as you move the cursor around. Once you are used to the program, you can turn the window off, but (especially with a large monitor) it's no problem to leave it on. This is a neat, extremely useful idea – other developers take note!

If you're in the market for a paint program, and especially if you need a 32-bit package, this one is certainly worth a look. It's available from KimTec UK, on 0202 888873.

Ian Wrigley

PC

POST-CHRISTMAS BLUES?

Believe it or not, this is the first column I have actually written since the new year – yup, even on a weekly, those lead times are pretty long… which is why it's only now I can report that Dixons has chopped the prices on the new GX4000 console and Plus models!

I haven't received the figures yet, but I'll keep you posted, especially as to which other retailers follow suit. The price cuts are a surprise, especially so soon after the launch, but Amstrad has obviously been rattled by the lukewarm response the machines seemed to get in the shops over Christmas.

Mind you, Amstrad is not alone. The new Commodore console has so far gone down like a lead balloon, and while the sales of the 16-bit machines and long-established consoles like the Sega and Nintendo are still buoyant, the industry as a whole is currently suffering from the economic fallout of Mrs T's years of terror (oops, bit of politics – sorry).

Amstrad can console itself with the thought that many software publishers and not a few hardware firms are also feeling the pinch as the punters hold back their cash for the more important things in life – like eating.

So has the Brentwood bunch been panicked into these price cuts? Are there huge mountains of unsold machines piled to the roof in warehouses all over the country? Is Amstrad going bust? I think not. I think the powers that be are simply acutely aware of how important it is for the new

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machines not simply to seep into the market place but to invade it in huge numbers. For Amstrad's plans to work, it needs a huge user base and it needs it fast if there's any serious money to be made.

KEEPING UP APPEARANCES

One of the things that Amstrad was very concerned about in the early days of the console was to demonstrate just how advanced the machinery was – and that meant choosing only the very best software to run on the special demo machines in the shops.

Hmm. True, there have been some really decent console games so far – *Burnin' Rubber, Gazza II, Switchblade, Epyx World of Sports* to name but a few – but there are others which don't exactly show the machinery off in its best light.

The temptation was always going to be for publishers to dust down their old software, tart it up a bit with the facilities offered by the new console chippery and then flog it off on cartridge. Amstrad was at pains to avoid this, but how successful the policy has been is open to doubt. *Switchblade* and *Burnin' Rubber* are great ambassadors for the console in the shops, but *Barbarian*? I'm afraid this one looks just like the old version, and that wasn't exactly a graphical masterpiece.

And although *Burnin' Rubber* was a great conversion other Ocean titles, such as *Batman the Movie, Robocop II* and even *Navy SEALS*, don't look as if they do much in console demo form that the old hardware couldn't manage.

Of course it would be far better to have reviewed some of these console games properly, but the problem is at the moment there's just no getting hold of the things!

Ocean is complaining that it hasn't even had samples delivered, and yet stores like Dixons have had them for weeks! And at £25.30 a time, our coffers just don't stretch to buying all those releases outright...

And anyway, once the things are in the shops and available to us, it's still going to take me two or three weeks to get the review in print in this column, by which time, it's not really up-to-the-minute, is it?

The solution? Well, we're currently persuading all the software houses to send us ROM masters for review directly before duplication... Watch this space.

FAR FROM BASIC...

If you're a games programmer who finds BASIC just too slow and machine code too tricky, you might be interested in the latest offering from SPM Software.

Power BASIC runs on the 6128 but produces machine code that will run on the 464 and 664 too. Hook it up to a commercial sprite-maker, and you should be able to turn out some decent-looking and fast-running games.

The price is £29.95, but if you bought SPM's previous release, the Blitz BASIC Compiler, you can upgrade for just £9.95 and the return of your master disk. *Blitz*, incidentally, didn't have a review on these pages because of persistent bug-trouble, but hopefully Power BASIC will put all that right.

SPM's address is 32a Albert St, Seaham, County Durham SK7 7LJ, or you can call 091-581 7064.

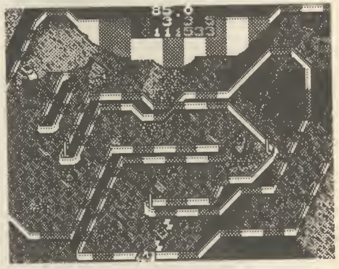
OFF-ROAD HEAD-TO-HEAD

Iron Man, the game featured as a playable demo on *Amstrad Action*'s October covertape, is now finished. At the same time, Domark has completed its conversion of the arcade driving blast *Badlands*. Both are rough 'n' tumble driving games where the whole of the track is on-screen at once and where you have to bump and barge your way past other computer and human-driven cars over several circuits. There the similarity ends. *Iron Man* is the one that gives you the bumpy ride, but *Badlands* is the one that's a pain in the ass...

Iron Man is set in the mud-churning, bump-bouncing, hill-climbing world of off-road racing, where winning is the ultimate goal but just staying on the track is enough of a challenge! Your little car leaps and bounces around almost (it seems) at random, and hitting the Fire button for that little burst of nitro for extra speed makes it even more uncontrollable.

After a while, though, you realise the knack; point in the right direction, hit the nitro, hang on and then pick your moment to do it again. You only have a certain nitro charge at the start of the race, and although you can pick up charges from the track as you race, you'll still need to use it wisely.

At the end of the race, you're awarded prize money according to your placing, and you can use this to buy more nitros, a better motor, stronger springs and other goodies in the *Iron Man* shop. And then it's on to the next – and tougher – race.

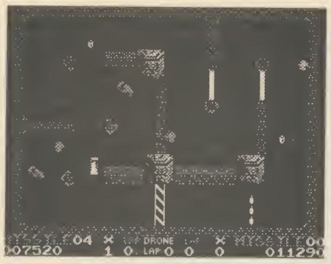


• Iron Man *looks confusing as a screen shot, but the cars show up well when moving.*

There are eight tracks in all. That may not sound many, but they become very tough very quickly, and once you throw in the fun factor of the simultaneous two-player mode you have a game with plenty of long-lasting entertainment value. The only problem is, even with loads of practice, the cars remain about as controllable as a cork in a storm, rather diminishing the long-term interest.

Long-term interest isn't *Badlands*' problem at all. Interest of any description would be nice. Unfortunately, though the game looked terrific in the arcades and pretty smart on other home micros (bar the Speccy, natch), the Amstrad version frankly looks horrible. It's bad enough that the graphics look as if they've just emerged from the primordial swamp, but the gameplay itself is... well, dull would be the kindest term.

You race around collecting spanner tokens, bashing/beating other cars and trying to reach to the finish first. And then, as with *Iron Man*, it's off to the shop, only this time you're buying missiles and armour instead of all the DIY mechanic stuff. All this hardware would be great if it weren't for the fact



• *Badlands: no, there's nothing wrong with the screen shot – these are the graphics...*

that the computer cars are a bit of a pushover anyway. You can spice things up a bit with the simultaneous two-player mode, but not much.

The verdict? Well you can probably work it out for yourselves by now. With both games costing £9.99 on tape and £14.99 on disk, *Iron Man* is the best by a mile. The control is a teensy bit random, but it's all great fun nonetheless. As for *Badlands* – well, save the cash and go and play it in the arcades...

Rod Lawton

Amiga

NEW AMIGA LAUNCHED

After the enormous success of the A1500 case conversion kit for the Amiga 500, Checkmate Digital Ltd has announced its plans for a vastly enhanced system aimed at the professional market.

Based around an existing PC tower system casing, the Hi-QTower will house an Amiga 500 plus a whole assortment of different add-ons within a single upright tower system (much like the A3500). Pose value aside, what really makes the system so special is its sheer expandability – as standard Checkmate provides three Zorro expansion slots, which will allow Hi-Q owners to take advantage of the vast range of 2000 cards available. If you need it, Checkmate will even install a video slot, therefore allowing the Hi-Q system to use 2000 video cards such as genlocks, flicker fixers and even the famous Video Toaster from NewTek.

If you feel like being really flash, there's even space for up to six 3.25-inch devices within the main tower system box. With this amount of expansion space available, it's perfectly possible to install multiple floppy and hard drives, tape streamers and even CD-ROM units, etc. To drive all this extra hardware, Checkmate has built in a high capacity 220w power supply. Checkmate claims that this should be more than adequate to drive both the Amiga itself and any add-ons that rely on the host machine for power.

The new system was designed to take on and beat the new Amiga 2000 system soon to be launched by Commodore (*Express* passim). From the very start, Checkmate designed the machine around the CSA processor accelerator card which will allow the Hi-Q to run at 33MHz with 17Mb of RAM split between one 8Mb block of 32-bit RAM and a 9Mb block of normal Amiga system RAM. Of course you can use any other brand of processor accelerator, but the CSA card is the one that Checkmate recommends.

Unlike the original A1500 kit, Checkmate doesn't just intend selling the Hi-Q as a sort of DIY kit for existing users. In a move that is sure to raise a few eyebrows at Commodore HQ, the Hi-Q will be made available as a machine in its own right. Users looking for a powerful Amiga with vast expansion capabilities will be able to buy the Hi-Q complete with the guts from an Amiga A500 already installed. To further enhance the machine, Checkmate intends to produce not one, but a whole range of machines based around Hi-Q technology. This will include machines with faster processors, hard disks etc. For more, phone Checkmate on 071-923 0658.

A1500 UPDATE

Also from Checkmate comes the news that A1500 owners haven't been forgotten. According to Checkmate's own Steve Jones, the company is still hard at work on the promised 'OverRider' A1500 expansion chassis which will effectively provide the A1500 with 2000-compatible Zorro slots. Steve blames the delay on a number of factors beyond his control, but promises that the overrider (possibly with an enhanced specification) will be made available shortly.

SONY-CBM LINKUP

Rumours abound that Commodore US may soon team up with the Sony Corporation to promote the use of Sony and Commodore equipment within video studios. With the machine's growing importance within the video industry, industry pundits believe that the two companies may welcome up with a professional-level video system based around an Amiga 3000 with NewTek's Video Toaster and some equally tasty Sony video gear.

POWER PROGRAMMING

If you're after a truly powerful assembler development system, then look no further than Lake Forest Logic's new Adapt assembler. Adapt is a comprehensive collection of programming tools for the assembly-level programmer. It includes an optimising 68040-compatible macro assembler, high speed single pass linker, execution profiler and program module analyser. As well as the full range of Motorola 680x0 series processors, Adapt also fully supports both floating point and memory management units (FPU and MMUs respectively). For Workbench 2.0 users, Adapt even includes full ARexx support within both the assembler and linker, therefore allowing Adpet to be called from ARexx compatible text editors such as Cygnus Ed.

Also new from Lake Forest is *MacroPaint*, a paint package which allows you to use up to 4,096 colours in high resolution. The program fully supports a number of picture file formats including Split-HAM (SHAM),

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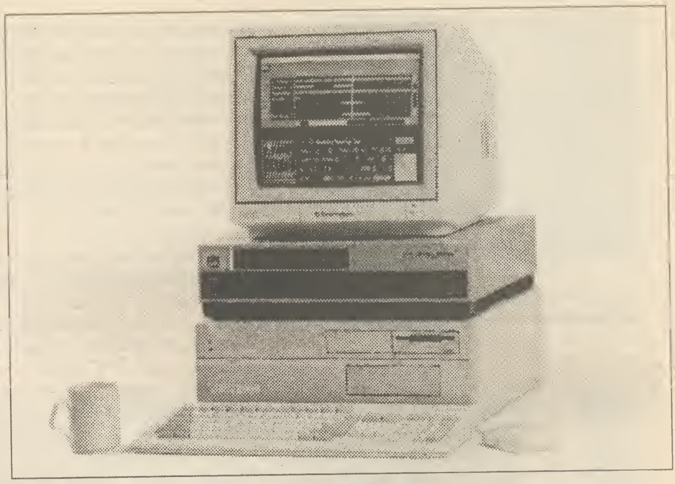

• **ShowMaker** *– now available in cut down* **MediaShow** *guise.*

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PIPE DREAM

Amiga musicians will be pleased to learn that Blue Ribbon Bakery has launched a professional version of its successful MIDI sequencer system, *Bars&Pipes*. Called (not surprisingly) *Bars&Pipes Professional*, the new program includes all the features you'd expect from a professional level sequencer, including such features as full graphical editing, powerful SMPTE support, automated mixing, event list editing, plus a whole lot more besides. Probably the most major addition is the all new Score Editor which allows you to display, edit and print your music in conventional score format. For synth owners, there's also a comprehensive SystemExclusive (SysEx) management tool. For more, give HB Marketing a call on 0753 686000.

GOLD DISK GOODIES

If the impending launch of *Professional Page* 2.0 wasn't enough to whet your appetite (*Express* passim), Gold Disk has announced the launch of no fewer than three new products over the coming months. First up is *MediaShow*, which is actually a cut down version of Gold Disk's long awaited *ShowMaker* desktop video presentation system. According to a spokesman at Gold Disk, the company decided to produce *MediaMaker* after realising that *ShowMaker* was perhaps a little too high level for most users needs. With this in mind, Gold Disk stripped out features such as SMPTE to produce a presentation system that would run fine on a basic A500. The result is *MediaShow*.

Once *MediaShow* is safely out on the streets, the next big release will be *ShowMaker* itself. *ShowMaker* is a professional level video presentation system that will allow users to construct presentations from a variety of different media including video disks and VCRs. The program includes powerful graphic event sequencing using a powerful graphics-based cue sheet system. Among its bewildering list of features are full support for MIDI output, MIDI and SMUS files, plus intelligent autoloading of animations and graphics, animation playback synchronised to music in terms of 'frames per beat', video titling over Amiga animations and graphics, full external clock support (SMPTE and MTC) plus compatibility with Commodore AmigaVision files. Last, but certainly not least is a brand new hypermedia authoring system called *HyperBook*. It is an applications generator along the same lines as *CanDo* and the famous Mac *HyperCard* system. Details are sketchy, but I'll bring you more as soon as they are made available. More information can be extracted from Silica Systems which is on 081-309 1111. Don't forget to tell them *Express* sent you!

Jason Holborn

Archimedes

SPEAKERS CORNER

Near enough seven years ago, Superior Software published its first and as yet only piece of serious software, the Speech! ROM. At the time this was one of the most innovative pieces of software available for the good ol' Beeb, an entire phoneme-based speech generation system in 8K of 6502. It was even quite recognisable, although having a written copy of what it was saying did improve things enormously. That may have been OK. in the early Eighties, but the Archimedes owner of 1991 really deserves something better. The name may still be the same, but Superior's Archimedes Speech is promising to be the last word (sic) in software speech generation. According to Steve Hanson at Superior, the output is really amazing but you'll have to wait until Easter time for a release. After a few last minute alterations, *Master Break* should be ready by the time you read this. I hope to receive a copy shortly, so more coverage soon! Superior has no definite Archie plans for 1991, Steve told me he's planning to play it by ear and possibly concentrate on porting some ST/Amiga games, it seems there's still a market for BBC games, so Archie coverage will remain low key. A BBC flight simulator (the first since *Aviator!*) is in the pipeline and an Archie version is a possibility. Superior is on 0652 58585.

TOTAL ECLIPSE

I've now had a chance to play the final versions of *BlowPipe* and *WorldScape* and have to admit that although they are both very good games, they are a touch on the hard side! In *BlowPipe*, I have not yet managed to kill the first guardian and get off level one or even been able to afford to buy anything in the shop except an energy recharge! You can't even cheat by renaming all the level2 files as level1. Boo... This is a game in serious need of a cheat mode. (Talking of cheats, have you ever fiddled about on the key definition screen in *PipeMania?* – you can make some very peculiar, but useful, things happen!)

WorldScape is a global version of the popular game *Sim City*. You start off with a 'clean' world with no pollution, no greenhouse effect and, well, no people! You must do your best to build villages, towns and cities and provide them with power. This means building power stations, power cables and pipelines to transport any waste products away. The problem is that you have a limited amount of 'energy' to carry out all this development, and all the while you must keep a careful eye on the ozone layer and the global temperature to maintain as balanced an ecology as possible. This is all very well in theory, but in practice, well, it's an entirely different kettle of the fish. The manual (correctly) says that there is no 'right' way to play *WorldScape* and it's really down to you to work things out, try different methods and generally experiment. The problem with this is when you first start playing you have no idea how to go about doing things and you can quickly dismiss the game as you can't see anything happening.

The best thing that Eclipse could do to help this would be to provide a few ready populated example 'worlds' with some background information on each to describe how this position was reached. You could then either continue onwards or attempt to copy what had been done from scratch. I can see *WorldScape* being very popular in schools and I would think that's where most of the sales will go. The program is very good, but don't buy it expecting it to be a simple game, it is a very large and complex simulation which may not be everyone's cup of tea. If you are (or become) a *World Scape* fan, watch out for *World Scape II* promised this year!

Eclipse's 'serious' side, The Serial Port, has updated the software for its printer port joystick interface. It is now fully desktop orientated with lots of flashy icons and windows. As before you can either set up the joystick movements to emulate simple key presses or, via the programming language, more complex functions. Two applications are provided to display the status of the joystick and keyboard. Considering this is merely a program to let you use a joystick in games, it really is very professional and well thought out!

Eclipse and The Serial Port are on 0243 531198.

TECHIE TIPS

Firstly, a follow up to tip #59 back in *Express* 105, this dealt with the idea of supplementary font directories. I have since run into a little problemette with this system. The command:

```
    Set Font$Prefix
.,Modules.ClibIt
```

It is also perfectly possible to do this with:

```
RMEnsure Clib 2.5 RMLoad
System:Modules.Clib
```

'System' is thus treated like a filing system in its own right. The two peculiarities are firstly that filing system can also be indicated by enclosing the name in '-', but

```
RMLoad -System-Modules.Clib
```

causes a 'Filing system or path 'System:' not found' error and secondly that you can only perform a certain range of commands using 'System:'. For example, '*Ex System:' will 'Ex' the current directory, '*Info System:Modules.Clib' produces a 'Not Found' error and '*Dir System:' returns you to the root directory. You can, however, *RMload, *SLoad, *Type etc. perfectly happily. Strange? But true! Try it for yourself!

COMING SOON...

The world is slowly returning to normality after being afflicted by a very bad case of 'End of the Year', so I hope to be able to bring you some more interesting news over the next couple of weeks.

Maybe Serial Port's Colour Board, possibly Computer Concepts *Equasor* and *ShowPage*, perhaps even 4th Dimension's *PowerBand*.

Who knows, *Wonderland* might even surface, but hang on a min, what's that gliding gracefully over those trees? Hmm, it's got four legs, it's pink, got a snub nose, curly tail and going 'oink'.

Ken Coumarin

PC

CHANGING NAMES

One of life's little irritations is the way you can use the MS-DOS REN command to change a filename but not to change a directory name. All the directories other than root are in fact files. The first byte after the file name and type in the directory block is the attribute byte. Each bit means something to MS-DOS. For example, bit 0 is the Read/Write attribute bit. The file attribute bit is bit 5. If you look at the directory entry for a sub-directory you'll notice something else odd – the file size is set to zero.

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Since a directory is just a file with an attribute bit set it seems a mite odd that you can't just change the name. Changing a file name is accomplished using Interrupt 21H Service 56H, which didn't originally support directory name changing but did support it from MSDOS 3.3 onward. Oddly, the NAME command of GWBASIC continued to refuse to alter directory names. Not so QuickBASIC. The line:

```
NAME "\ONE\TWO.DOC" AS
"\ONE\THREE.DOC"
```

renames the file TWO.DOC as THREE.DOC simple enough. The line:

```
NAME "\ONE\TWO.DOC" AS
"\THREE.DOC"
```

not only renames it but moves it to the root directory at the same time. But best of all the line:

```
NAME "\ONE" AS "\TWO"
```

Renames the directory \ONE as \TWO. It's all so simple in a half way decent language. So why doesn't Zortech C support directory name changing with rename()? Highly irritating.

ANCIENT AND MODERN

Two new games arrived in the office this week, both with a distinctly mystical air to them. The first was *Spirit of Excalibur* from Virgin Mastertronic. this is, as the name suggests, an Arthurian adventure or rather "fantasy epic game". And for once epic seems an appropriate description. The game consists of over 2.5Mb of data, most of it very impressive graphics of Camelot and the knights of the round table.

Gameplay is entirely mouse and icon driven; you decide where to go via a map screen then descend to ground level and give commands to interact with peasants, maidens, wizards and the like.

Virgin reckons the game is historically accurate (except for the magic spells presumably) and it's certainly easy to control. The animation is nice; the knights walk in a very realistic way, but there is a lot of hard disk access involved, leading to a lot of pauses even on fast machines.

Spirit of Excalibur will be out in a couple of weeks time costing £34.99. As a nice touch the VGA files come on 1.2Mb disks, with EGA ones on 360K floppies.

The same exorbitant price is being asked for *Lord of the Rings* the new adventure from Electronic Arts. Based, surprisingly enough, on the Tolkien epic, this is another mouse controlled adventure.

I'm not a Tolkien fan, and have never progressed more than half a dozen pages into *Lord of the Rings* before falling asleep, so I can't comment on the accuracy of the game. The gameplay does seem a bit dull to me, but then I suppose it would. The bottom third of the screen is taken up by icons which control your character, allowing them to talk, fight and so on. The graphics are well drawn but have a roly-poly Beryl Cook appearance to them which detracts from what I suppose is meant to be a serious game. Tolkien aficionados only I'm afraid.

GET A RISE

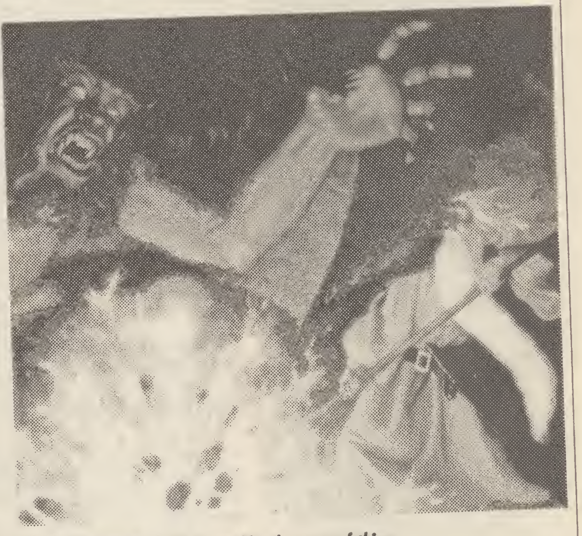
There is PC software which can help you to do most things, but this is a new one: a program which aims to teach you to negotiate.

Negotiator Pro is a hypertext system which allows you to specify the characteristics of the person you will be talking to, then practice your skills from the safety of the keyboard. You can use the program backwards to try and identify your weaknesses when someone attempts to negotiate something with you. Better hope your boss doesn't buy a copy.

The program is of course American, made by Beacon Systems on 0101 617 738 9300.

CHANGING TONGUES

If you write powerful programs you expect them to sell, and sell abroad. The problem with that is the language; not the computer language, but the spoken language of the end user. Translating the text is bad enough but going back to the original source code and changing it before recompiling is a real pain.



• *Lord of the Rings: OK if you like that sort of thing.*

To the rescue comes *PowerTranslate*. This utility analyses the text in your source and produces a database of it. You then translate the text in the database and *PowerTranslate* puts it back ready for recompiling. Compatible with C and Pascal it can speed up foreign language versions enormously.

PowerTranslate is available from Performance Technology in Texas on 0101 512 524 0500.

Stuart Anderton and Steve Patient

64

WELL HARD

Returning from a well-earned holiday I found my chair stolen on the day I came to write this. Perhaps you would be saved from the relentlessly depressing efforts of the software industry, given an early reprieve. But my chair had been stolen by a colleague who was playing the latest offering from Infogrames on the C64 next to my desk. The publisher of the enormously successful sequel to *Tetris*, *Welltris*, had converted this fine game to the best 8-bitter around.

It works like this. The focal point of Alexey Pajitnov's *Welltris* is an eight by eight square grid at the end of a four-walled tunnel, twelve squares deep. One at a time, shapes fall down a tunnel wall before coming to rest in the grid. The shapes consist of between two to five grid squares arranged only in so much that one flat side of a square is adjacent to at least one other square's side. As a shape slides down the wall the player can exert some control over it. The orientation of the shape can be altered by ninety-degree turns, the shape can be steered to slide down any portion of a wall (or indeed to slide down a different wall) and the speed of the shape's descent can be increased.

The idea is to contain the growing collection of shapes in the grid. A shape's descent ends when it comes to rest against another shape. With careful steering and alteration of a shape's orientation, it can be made to interlock with others in the grid in the most spatially economic manner. If a horizontal or vertical line is formed at any time by squares from interlocked shapes, the line disappears and the remaining filled squares re-orientate themselves to leave you more room in the grid. While there is usable space in the grid and one piece still falling, the game continues.

What you've got is a terrific challenge to your hand and eye co-ordination and your planning ability. If any segment of a piece comes to rest while it's still on the wall, that wall becomes blocked until the next three pieces have been placed, so the more you mess up, the more you're likely to continue messing up. Your score is affected by a number of factors. You get points for completing a line (and a separate tally tells you how many lines you have completed in a given game). You get more points for placing shapes faster and removing more than one line at once. Though the shapes appear randomly, the program calculates which shape it will drop next and this information can be displayed outside the well, to help you along. However, you pay a cost in terms of points subtracted from your score for having this information displayed. On the basic level, the game only uses, two-, three- and four-segment shapes. On the second difficulty level, only four-segment shapes are used. On the hardest setting, five-segment shapes are introduced.

Strange things happen when you attempt to fill in a corner. When a shape is wrapped around a corner (shapes can be positioned over two walls), its segments are aligned in an appropriate direction for that corner. Depending on the shape of the obstruction it faces in that corner of the grid, segments may overlap, making a smaller piece out of the original one. Remembering how this works can be crucial to staying in the game.

The game offers two control modes to handle things like the reorientation of the shapes on their way down the well but the default setup is the easiest for most people. Welltris is thoroughly compulsive. Unlike most of its contemporaries it isn't evocative of anything, though, so people who've been living on a diet of Turtles and Tracys will probably scratch their heads after a few minutes and wonder what's missing.

Sean Masterson

CHEAT AND POKE EXPLOSION

Simon "Iceman" Finnigan sent these Action Replay POKEs for oldies and not-so-oldies alike (games not readers).

Bionic Commandos	7518,165
	7505,230
Delta	15834,174
Knuckle Busters	43960,173
	41607,173
Phobia	5235,189
Professional BMX Sim	8692,0
Robocop	44416,0
Typhoon	4221,0
	16361,173
Wonderboy	2676,173
Manic Miner	16573,234
	16572,234
	16571,234
Chase HQ	36702,173
Sanxion	14142,173
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Oink	39922,165
Bomb Jack	5112,0
Falcon Patrol	16705,250
Ghostbusters	38454,96
Haunted House	7609,234
He Man (arcade)	6513,173
Train Robbers	15758,173
Professional Skateboard Sim	3701,96
	56576,103
Turrican	3030,173
	16365,0
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Midnight Resistance Demo (Commodore Format 3)	10141,173
Ghouls and Ghosts	10798,165
	13860,165

Anton Evans from Flint sent in the following cheat from Golden Axe. To skip levels, pause the game then press the colon (:) key. Lo! The next level begins to load. Until the next level...

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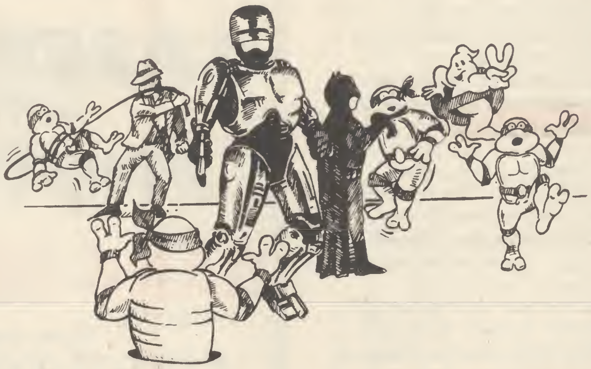

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Spectrum

SAM NEWS

News about SAM software is always welcome around here so it was good to receive Lerm Software's latest catalogue of stuff. Lerm pledged its support to the Coupé right from the start and although the catalogue in question is decidedly unbumper it's got some good things on offer. First and foremost is "the leading program for Spectrum emulation" *SAMTAPE 3*. This comprises two programs which let you load a Speccy program, freeze it by pressing the NMI button and then save to tape or disk. *SAMTAPE* can also reprogram the keyboard which makes it a good deal easier to get Speccy utilities like Tasword 2 working. *SAMTAPE 3* costs £10.99 on tape with a special version that copies to disk.

Also on its third version is *SAM ASSEMBLER 3*. This is a package of three programs; an assembler, as you'd expect, a disassembler and something called Single Step. The latter turns out to be an extra utility which let you step through machine code programs and show you what happens to each register, flag and stack. Apparently this is a Very Good Thing. All three programs can lie in memory at the same time so nifty you can switch between each one as you code your little heart out. There are 256K and 512K versions both of which are available on tape but are again easy to copy to disk. The price is £10.99

Available only on disk for obvious reasons is Lerm's *SAMDISK*, a utility that disk drive owing types should really go a bundle on. According to the bumpf it can find faulty tracks on your disks and attempt to repair them, print out file details, UNERASE files, PROTECT them, HIDE them or just copy the things very quickly indeed. The utility includes a BASIC boot program which copies to all you disks and then allows you to select any program from a neat catalogue. *SAMDISK* costs Lerm's usual £10.99 on disk.

There's also a special version for rich people with two disk drives who want very fast duplication. Apparently a whole disk can be backed up in half the usual time. This super soaraway special edition costs £25. The last thing Lerm have on offer for owners of our blue footed pal is the *SAM Address and Phone Manager*. This prints out labels and lists of names, addresses and phone numbers. The utility can handle up to 200 addresses so even the most popular people should be able to get their little black books onto their Coupé. There are various search and sort commands as you'd expect and the asking price is £8.50 All the above are available from Lerm, 11 Beaconsfield Close, Whitely Bay, Tyne and Wear NE25 9UW. More information can be gleaned with an SAE to the same place.

FORMAT'S BACK

The next All Formats Computer Fair is due to pack the Royal Horticultural Halls with bargains galore on Saturday 2nd February. There will be the usual profusion of box shifting exhibitors and the low cost of a stall (£75) means there should be a fair few user groups as well. I'd get along there if I was you. Advance tickets are £3 and available from Mike Hayes, 8 Midgrove, Delph, Oldham OL3 5EJ.

BUDGET TITLES

There seems to be some corking good budget games around at the moment and for once they are not all re-releases. The good old Codies have just released something called *Tilt* which is one of those simple but addictive games that chains you to your Speccy. Basically it's a computer version of one of those annoying maze games with you tilting the screen to guide a ball through the maze and down a hole to finish. Not much to look at but it's completely addictive and long term play is ensured with a large selection of different mazes to roll round.

ENIGMATIC MAN

Jon Rose, Editor of *E.T.M.* (the new name for *Enigma*) and thoroughly sound all round bloke has just let me have some excellent hints and multiface pokes:-

PANG POKE 26752,194 – Invincibility

Hint – Don't fire at the balloons by standing directly underneath them but fire slightly to one side and let the balloons hit your column of fire

Yogi Bear and the Greed Monster. A hint which I think is unfair on 128K owners. Choose Sinclair from the options screen (press 3) and on a 48K machine you'll have infinite energy and have to use the keyboard. 128K owners don't get infinite energy but do get infinite sweets once they have collected more than 10 sweets.

Monty Python POKE 33430,194 – Invincible against everything except enemy bullets.

Huge thanks to Jon. He also asked me a little favour. Has anyone got a copy of *Tasword 128* or *Tasword 2* they want to sell to him? Write to me at the usual *Express* address and I'll pass it onto Jon.

Here's a second batch of cheats for you kindly supplied by Alan Johns of Renfrewshire. Cheers Alan.

P47 – type your name as ZEBEDEE *Iron Soldier* – Type GAD *Task Force* – Define keys as CRASH *Cobra Force* – Define key as as SIMON *BMX Simulator* – Type your name as TAEHC *Talking Headz* – Type your name as CHEAT

Have you got any hints referring to any area of Spectrum owning? Send it off to me at *New Computer Express*, 30 Monmouth Street, Bath BA1 2BW.

Robin Alway

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• A Talespin-based adventure system is available from Deltronics.

GRIMLY FIENDISH

Have you ever marvelled at graphic adventures such as those from Magnetic Scrolls? Have you wished you could produce something as good, but know that your drawing skills are on a par with those of a shell shocked lettuce? If so then Deltronics might just have the answer for you.

The company has produced a disk which contains over 4Mb of fantasy and adventure graphics. Using the adventure creator *Talespin* you can then incorporate these into your own adventures. The graphics can be tailored to illustrate most scenarios you can cook up.

These would certainly spice up a run of the mill game into something very professional-looking. The only problem I can envisage is that we then get a spate of adventures with exactly the same graphics!

If the disk sounds like a worthy purchase then send £7.50 to Deltronics at P.O. Box 175, Carshalton, Surrey SM5 2WA.

16-BIT BASH

Joining the thronging, plastic bag grabbing, joystick destroying crowds at the 16-bit computer fair this year was yours truly. There were some interesting developments for the ST, which is increasingly eclipsing Commodore's over priced games machine.

Hisoft revealed that it is introducing one all encompassing basic language which has been massively updated. Hisoft BASIC 2 replaces Hisoft BASIC and Power BASIC and includes a multi-window editor, new libraries with easier GEM functions, a resource construction set and dialogue boxes. The program is set for a March release. You can contact Hisoft on 0525 718181.

Douglas Thompson from Arnor announced that version 5.07 of *Protext* has been finished and is now being shipped. The new version includes a whole new set of printer drivers and a cure for a number of bugs which found their way into version five. For further information ring Arnor on 0733 68909.

Without a doubt, the most spectacular software at the show was *Retouche*, the digital retouching program. With the aid of a scanner you can import graphics and treat them to an absolutely astounding number of effects.

The quality of this program is mind boggling, so good that it puts other packages – even Apple Mac programs – completely in the shade. Ray Cross of Copycare Business Services reckoned that the program proved "there really is only one computer: the ST."

At £500 the program is going to appeal to a fairly restricted group of ST owners, but when you see the quality of the retouched images, you realise that it's a superb investment. Copycare can be reached on 081 679 7307.

Titan Designs was showing its impressive graphics cards. These nifty boards enable you to display up to 2,048 x 1,536 (that's A2) on an ST, monitor permitting. Using the 1,024 x 800 or 800 x 1,024 card you can use a normal Atari SM124 monitor, which uses virtual memory to scroll up and down smoothly through the page. Contact Titan on 021-706 6085.

German company Protar Elektronik GmbH has a British subsidiary called Protar Ltd. It was showing some

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extremely advanced hard drives which use Progate technology. 40Mb, 80Mb and 160Mb versions are available, along with a 44Mb removable cartridge drive. Protar can be phoned on 01049 30 3912002.

Double Click Software had flown over all the way from the States to demonstrate its productivity packages. *DC Desktop* was ready and looks set to give *Neodesk 3* a run for its money. The updated *DC Utilities* was also being shown and includes some tasty packing, cramming and configuring software that no ST owner can afford to do without. Phone 0101 713 977 6520 for DC Software.

MPH had a first run version of its stereo sound cartridge for the ST, which will retail at £24.99 and should be available from the end of January. This can be used in conjunction with version 1.2 of *TCB Tracker* which will include a score editor, better replay routines and an improved password entry system. MPH can be reached on 0603 503382.

Riverdene was being tight lipped about its moves into the world of serious software but revealed that its new program could provide a few surprises for that other up and coming software publisher: MPH. Professional programmers have been employed and a product is nearly ready. Watch out Phillip and Anders, Riverdene is on the march!

BACK TO SCHOOL

The news that Atari is planning to release an educational package centred on the ST is bound to bring a wry smile to the faces of Commodore's marketing team. Atari's main rival released a package aimed at the education market in 1989 which has fared extremely well.

However it may well be Atari which has the last laugh.

The ST is far better suited to the rigours of an educational environment than Commodore's games machine. With school budgets stretched to the hilt it's the ST which offers the best value for money. The massive and diverse software base of the ST will mean that schools would have a computer which can be used for hundreds of serious applications rather than simply as a games machine. No other computer can come close to matching the ST's wealth of music software. Moreover applications such as DTP are equally well covered, with superb programs such as *Calamus* running on the ST.

So lets hope Atari does a good job. Sales of STs in schools will mean that more will be sold for the home. More sales means more support. More support means a better future for the best 16-bit computer on the market.

QUICK CLIPS

The problem with producing work with a DTP program is making it look professional. The appearance of any page can be improved by incorporating some graphics to break up the monotony of straight text. Kuma computers has produced a selection of clip art which can then be imported into a DTP program.

Thirteen libraries, each costing £29.95 are available. The range includes *Transportation, Bird and Animals, Business Graphics, Occupations, Signs and Symbols* and *Education*. Each library consists of about 40 images which come in both .IMG and .MAC file formats. Also on the disk is a utility to convert these to Degas or Neochrome formats. Kuma computers can be contacted on 0734 844335.

DOCTOR CD-ROM

Everyone's hailing multi-media as the next big development in the computer world, but this is one journalist who remains unconvinced. The main problem has been getting hold of the CDs themselves. Up to now about the most interesting CD available for the ST contains a list of aircraft parts. Digita International hopes to remedy the problem and has released of a range of 60 titles. The most recent of these is *Dr Wellman – family medical adviser.*

The 450 Mb CD contains over 125,000 words and 2,500 pictures on a massive array of medical problems. The whole CD is fully narrated and includes graphics, animations, stereo music and most intriguingly, sound effects!

Topics covered by Dr Wellman include: What is an orgasm?, Jelly Fish, Clearing Airways, Drowning and Gastroenteritises. The CD would be ideal in a school, library, waiting room or hypochondriacs bedroom. If you need some discrete medical advise, give Digita a ring on 0395 270273.

Andy Hutchinson

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STRUCTURE THAT DATA

Storing complex information is made easy with data structures – Mary Branscombe shows you how to do it.

Niklaus Wirth, the author of Pascal, Modula 2 and Oberon (an object-oriented programming language), made famous the definition of a program as algorithms plus data structures.

Simple variables are often not powerful enough to store complex information in a coherent form and it is often better to structure information in a data structure. A data structure is collection of related items of data which are treated as a single object. The most common example is a record in a database and in real life forms, shopping lists and entries in address books are all data structures. In computer languages, data structures can be predefined in the language or constructed by the programmer. They can also be static or dynamic – their size and configuration can change during the program run; dynamic data structures will be covered next week.

REPRESENTATION

A data structure is used for more than providing a convenient form of storage – it is used to store, access and operate on the data that it contains. It also determines the representation used for the data and this is important for more than simply fast access. If the data structure used to represent the data that the program acts upon is not appropriate for the area covered by the program, then even the most efficient program will not work well. However, given a correct representation for the relevant data objects, it will be clear how the program should break down into routines and components and this should be relatively straightforward to code.

This is particularly important in Artificial Intelligence, where many techniques are based on variations of simple search algorithms and a good representation for the data in the space being searched is vital in order to write programs that are capable of dealing with realistically large amounts of data. The ability to retrieve the correct data from the structure as necessary is equally applicable in other areas, which is why it is important to be able to choose the best data structure for an application.

STATIC DATA STRUCTURES

The list is the most basic data structure, consisting of a sequence of objects with no numeric ordering. Lists are used in extensively in Prolog and functional languages such as Miranda and Lisp (for LIst Processing), and they are also available in languages such as C. List Processing is a programming technique in its own right and we will discuss it in detail in a later issue.

Lists are good for dealing with an unknown number of items, which need to be modified repeatedly. Locating an item in a list requires a linear, depth-first search, so that the time taken to find an item increases in linear units with the length of the list. This means that lists are not efficient for large amounts of data which need to be accesssed at random.

Rather than searching through the entire data structure for an entry, it is possible to index the contents and the most common structure which uses indices is the array. Perhaps the best way to think of an array is as a set of pigeonholes organised like entries in a table. Each element in the array is accessed by specifying the two co-ordinates which give the element's position. The indices which locate the data are given as subscripts when setting up the array. These indices are usually integers, but in Snobol they are strings of characters.

← INDEX TERM ONE →

INDEX TERM ONE ↕					
	12	4			
	32	9			
	5		3		
	7		1		

BBC Basic and Lisp allow dynamic arrays, where the size of the array can be increased as necessary during the program run.

A single-dimensional array is known as a vector. Vectors in Lisp carry a fill pointer, indicating how many elements in the vector are active. Another feature makes arrays in Lisp very flexible; the elements of a Lisp array can be of different types, whereas most languages insist that the elements of an array share a single type.

Arrays are generally efficient forms of storage because the indices allow the contents of the array to be accessed quickly, but they are not suitable for situations where elements will be inserted in to the interior of the array, rather than added to the end, because the existing elements will have to be moved, the indices respecified and the memory pointers shifted. In these situations, a list is more suitable.

The main use of enumeration loops is to step through the contents of arrays, generating values for the indices and storing elements or retrieving the values already stored.

Hash tables, or key-to-address transformation organise data using an encoding system that associates a unique identifying code with each entry in the table. The same algorithm is used to encode and retrieve the data. Finding a system of numeric codes to represent the data can be difficult. If the algorithm is not guaranteed to return a unique identifier for retrieving records then collisions can occur, resulting in the wrong record being retrieved.

Hash tables have a constant access time, because each retrieval is performed by the same algorithm. This contrasts to the linear time required for an array, so that hash tables are better for large amounts of data that need to be accessed often and quickly.

Records, frames, classes and structures all represent the same concept in different languages, that of an index card. Like a record in a database, a struct in C, a class in an object-oriented language or a frame in an AI system is simply a framework with hooks on which to hang certain types of data, fields or slots which hold the values contained by the structure. The following outline:

A RECORD

PERSON:	
NAME:	Jane Smith
AGE:	28
GENDER:	Female
OCCUPATION:	Programmer

could be coded in Pascal as:

```
TYPE PERSON = RECORD
    NAME: STRING;
    AGE: INTEGER;
    GENDER: STRING;
    OCCUPATION: STRING
END;
```

The values stored in each slot are accessed by referring to the name of the slot. As they are not integers, they cannot be calculated by an enumeration loop, unless the loop is given all the slot names. Structs and similar structures can include another structure as a slot:

```
education:
    primary:
    secondary:
    further:
```

This allows a hierarchy of structures. All the elements defined in the original structure are inherited by all instances of that structure used in the program. This concept is used in object-oriented languages to define classes and objects which are instances of those classes. In C++ and Lisp, objects can inherit characteristics from more than one parent class; this is known as Multiple Inheritance.

A set is an unordered collection of items. If an item can appear more than once then the collection is known as a bag. Thus {A,B,C} is a set and {A,B,C,B} is a bag. Pascal and Modula 2 provide sets as standard structures and all the operations of set theory are available, including union, intersection and finding elements and subsets. Many implementations of Prolog contain the predicates setof and bagof, which collect items from the program's database if they pass specified tests.

Sets are usually implemented as arrays of type Boolean; each element of the array records the presence or absence of an item. The array for the set given above would be:

A	B	C	D	E	F
T	T	T	F	F	F

Files are normally thought of as containing only programs, but they can also be used to store incoming or outgoing data. Files are also normally seen as being connected with the operating system, but they form a common and useful data structure, especially for the storage of data which is to be held and accessed over long periods of time.

Pascal treats files like any other data structure and provides functions for reading and writing items to and from files. A file can be declared to be of any basic data type:

```
VAR text: FILE OF char
```

declares the variable text as being a sequential file of characters. Only one item of data can be stored or accessed at once and items are retrieved in the same order as they were stored. A file pointer is used to point to the current item of data in the file. Data in a direct access file can be written and read in any order. ■

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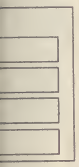

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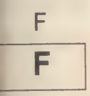

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OPENING TIME

I bet no one ever thought that the humble PCW would ever get an affectionate mention in these pages. I have, over the last few weeks, received some thrillingly abusive mail which accused me of not mentioning 8-bit computers enough. Always a man of democratic leanings, I find that I must remedy this state of affairs and admit that, yes I own a PCW.

Among all my other high-tech machines, nestling behind the Mac IICxs, the NeXT colour workstations, the Amiga 3500, and the Dell, my PCW lurks. Known affectionately as Christine (see the Stephen King book of the same name) this single drive, 512K or rather 1,512K as I have the spiffing SCA memory upgrade clamped on the back, marvel has served me well for some three years now.

Admittedly I have painted it matt-black, added chrome tail fins, a screen filter, a customised and ergonomically designed keyboard, stereo speakers for that ear-smacking bleep, a Cirtech Diamond hard drive, a Vortech hard drive, and a small sticker which shows a section of Kylie Minogues anatomy. I have also lent it to a very good friend of mine in Thailand. Satisfied?

WEALTH AND POWER

So, what's to do in the world? Steve Wozniak spent £2m($4m) on making his house look like a cave. Makes you think that doesn't it? It makes you think just how much money one person has to earn before they start doing extraordinarily stupid things with it.

Could someone out there possibly write a program which could assess this? It should be a fairly simple thing to do. Get hold of *Forbes* magazine, check out the ten wealthiest people in the world and then work out just how much money they had in the bank before they started penguin farming in the Mojhave desert, or buying £12 m of Greenshield stamps. Then enter details of age, nationality, sex, and how they came by the dosh. Voila you can create guidelines as to when to lock these people up in secure rest homes and redistribute the money.

Computers are marvellous things for this kind of dumb number crunching.

POVERTY AND IMPOTENCE

Beware of credit card bearing gits. My old blind, deaf, dumb and bald Great Aunt Charles once signed me this message and how true it is. Last Christmas a good friend of mine, who shall remain nameless, got a Visa card. He promptly went off to the sales, bought an Amiga 500 pack, a colour monitor, and a megabyte upgrade. After all this he still had about £1,200 credit limit so he bought an external disk drive, a hand scanner and a meal for everyone. He is currently residing beneath Blackfriars Bridge and has nearly managed a sponsorship deal with VP Sherry. Now get out of this column and don't come back trying to give me large amounts of illegal software.

LETTER SPRAY

Letter Spray, the area where you get to be utterly silly. This activity has been scientifically proven as one of the healthiest things in the world to do. It runs a close second to you-know-what and a close third to beating West Germany in the World Cup Final at *Kick Off II.*

Dear Tim,

I got an Amstrad GX4000 for Christmas and I don't seem to be able to find the keyboard. I've looked through all the packaging and can't find it. It must have a keyboard, because all computer do. It must be a computer because it has been mentioned in *New Computer Express*. Have I been had?

Yours Michael Jackson, Croydon, Surrey

Dear Michael,

Try phoning Amstrad. Ask for a Mr Sugar and once you've got through to him put your query. The following numbers should prove useful: 0277 228888 or 0782 566344 or 0279 454555. Please write back and tell us how you got on.

Dear Tim,

I wonder if other readers have noticed that ten years ago, the Sinclair ZX80 was considered to be state-of-the-art (*rather like Soviet realism was art-of-the-state-TS*) and now its considered to be a small black thing which only five year olds would dare to use. The Amiga 500 has been around since 1985 hasn't it? (*yes it has*) Working with history as a precedent therefore, it seems that the Amiga only has another four years left to go.

Yours Steve Watson, Bristol

Dear Steve,

Interesting way of thinking that. However ten years ago the world of computing was a very different kettle of mixed metaphors. For example, ten years ago there was no such thing as colour home computing, stereo sound, decent upgrade paths and so on. I think personally, and I am in no way swayed here by the thought of a free lunch and reserved seat at Stamford Bridge, that the Amiga has got at least six years left before grown-ups start falling about laughing at the thought of it.

DESPATCHES

All around the world people are doing things with computers. Some of this activity is legal, some is illegal. Some of it is important and some is irrelevant. Only the Centrefold's foreign correspondents can really tell the difference. This week it's Sir Ralph Wickelton-Wackelton-Wynds from the North Pole.

Smiffy old boy,

Demnebly cold here you young pup, demnenbly cold. Bought the Outbound with me this trip. Excellent portable. First class. Good for noting down field work findings. 1,200 igloos spotted, sorted and noted in the last four years. Good show.

Tricky beggar Johnny snow though. One never knows when he's going to creep up and white one out. Foxes one and one's collection of Martech games.

However, when white-out occurs, simple, just play *Chessmaster 2000* on the jolly old Outbound. Superb gameplay. Keeps crashing though. Bit of a bugger. Checkmated it 186 times during last white out. Found the following to be useful: Benko Gambit, Benoni Defense, Nimzo-Indian Defense, Queen's Indian Defense with the Fianchetto Variation, Alekhine's Defense, Kann Defense, Panov-Botvinnik Attack, Pirc Defense, Morphy Defense, Giuoco Piano, Bird's Opening. Tremendous! Tremendous.

Jarvis popped-off last September. Went outside for a short walk with the team's copy of *TasWord* for the CPC. Never came back. Always thought he was a bit of a queer fish what with the chicken, the elastic bands in strange places, and the collection of 14th Century Polish monastic erotica. Leant those to him and never got them back. Queer does all round.

Managed to track down the one software developer out here. Vaslav Leninchenko. Stout yeoman. Strange politics. Excellent programmer. Wanted to program in C, but the Reds don't have a letter for it. Shame! Has to program in COBOL instead. Spiffingly fine word processor called....

And here the letter, which had been scrawled on the back of a piece of pemmican, ended.

FACTS ALOT

In 1980 Richard Wirthlin used his PINS (Political Information Service) to present presidential candidate Ronald Reagan with 400 simulations on data relating to every conceivable action Ronnie could take in the election.

I WISH I'D SAID THAT

This week's IWIST comes from Mr Philip Beed of Hampshire. Cheers Philip.

A recent visit to his local computer store to purchase 100 sheets of printer paper resulted in the following conversation.

Salesman: *Here's your receipt and guarantee sir.*

PB: *(sarcastically) Oh, how long do you guarantee paper for then?*

Salesman: *All our goods are guaranteed for three months sir.*

Philip heads for the door smiling to himself, the penny drops and the salesman calls out: "Not much can go wrong with paper can it sir?"

Philip tells me that he was tempted to save all the draft copies with spelling errors and so on to see if he could claim under the guarantee. He also says that he won't mention the name of the store as it might embarrass Electroniquip of Fareham.

THE GEEK

IT'S ALL GEEK TO ME

This week.... the Geek went to buy a RAM upgrade for his MSX. But when he went to the shop he was too embarrassed and had to buy a tube of toothpaste.

NTREFOLD

IN DEVELOPMENT

What's so hot that it would burn Beelzbub's own mitts if he (or it could be a she) decided to pick it up? Centrefold news that's what. And our Ed Ruin, the Centrefold's man of the moment brings us the lastest updated chart of new releases for the 21st Century.

1) The Yamsoshita OCR scanner and crowd control device. Allows standard PC compatible to read the Riot Act while water cannoning up to 14,00 people. ¥123million: On sale Japan Dec 2033. Europe Jan 2032. Europe Mar 2211.

2) Howland Mart FingerScan – enables user to run little finger over colour images up to three feet square. $12.50: On sale USA July 2002. Japan Aug 2002. Europe 2543.

3) JuJuBird PC 96 Channel StereoSoundBoard – enables the user to play up to 96 channels of the JuJu bird's song and thus create a calm, natural working atmosphere. $4,000: On sale Japan Dec 2111. USA Dec 2111. Europe Dec 2111.

4) Polit 386sx bureauTop PC – new from the Eastern block. This PC has 386 nuts and bolts which hold the casing together. UNIX compatibility. 12 ports. Infra-red mouse and 80Mb hard disk. Super VGA screen and bundled OCR scanner and software. All of these are also being developed somewhere in the world. For now you will have to make do with C/PM 2.1, one port (Centronics), MDA screen, and SuperCalc 2. 150,000,000 roubles: On sale Japan Mar 3122. USA Mar 3122. Europe Aug 3566.

More news next week.

FACTS ALOT

Apple stopped selling ROMs last year because too many of them were ending up in emulators.

The most common form of magnetic tape used is half an inch wide and approx 2,400 feet long.

A Commodore A2500 was the controller for video scoreboard at the 1989 Peace and Friendship Games... in Kuwait.

Ins and Out for 1991

The ultimate style guide from the Centrefold stable. What are the hip things for this year? What are the subjects you should avoid bringing up at parties if computer shows? Find out now...

IN FOR '91	OUT FOR '91
Budget software	Virtual Reality
Second-hand hardware	NeXT colour workstations
Fantasy Adventure games	Shoot-'em-ups
The Acorn Archimedes	The Macintosh SE30
Spreadsheets (save that money)	Databases (nothing to sell)
TV show licences	Film Licences
Cover mounted disk lables	Cover mounted disks
Bubble jet printers	Dot-matrix printers
Copy protection devices	Hackers
BASIC	C
Ergonomics	Comfortable chairs
Litter bins	The paperless office
The Mac Classic	Olivetti PCs
The PCW Plus	The PCW8512
Hand-helds	Consoles
Screen filters	Eyestrain
RSI legal battles	RSI
Mice	Track balls
Stuart Pearce	Gazza
Opera simulations	Footy simulations

Do you have any Ins and Outs for 1991? Why not send them in to This Is The Year That Will Be at Centrefold, *New Computer Express*, 30 Monmouth St, Bath, Avon BA1 2BW. There might be something in it for you.

DOG FROM ILFORD WRITES GAMES FOR UK SOFTWARE HOUSES

A CENTREFOLD EXCLUSIVE

We can exclusively reveal that Johnetta Major Prime (Fluffy to her owners), a 3-year-old labrador-Jack Russel mongrel is the mastermind behind many of the world's smash hit computer games.

Cedric and Lucretia Socket, who own the Ilford bred hound, first discovered the amazing powers of Fluffy one wet Sunday afternoon in 1989. The dog leapt up onto the desk where Cedric Socket's Archimedes A3000 resides and began tapping in lines of machine code with her snout. Ex-bus driver Cedric allowed the eager young hound to continue her activities for some hours: "I even watched her debug the code", commented the now wealthy Socket, "it was really interesting actually. We knew that she was intelligent and had written to *That's Life* on several occasions regarding her ability to bite trees and jump in the air, so her programming skills didn't surprise us that much at all."

The first, rather naive game, written by the canine coder was called Woof Bark Snuffle. Later renamed as Shuffle Puck Café "It was really quite an interesting game really." Recalls Lucretia Socket. Next came Howl Grrr Woof , renamed as Sim City.

"Many people will say that we are just trying to cash in with an absurd story. But if you think about it, it's feasible. It is a well known fact that dogs have the second biggest brains after dolphins and that coding games is simply a matter of structured logic, so there you go. Can we have our £2,000 now?"

Centrefold attempted to contact several major industry figures for comments on the veracity of the story. Being a family magazine the comments cannot be printed.

TOSH 40

Lists. Nigel Rees does 'em. The Department of Health couldn't function without them. They're small, perfectly formed and a whole heap of fun. So read on to find out what's in the Tosh 40 this week.

TEN BOARD GAME CONVERSIONS TO COMPUTER

1) Chess (too many games to mention but *Cyrus Chess* on the PCW doesn't get enough publicity)
2) Monopoly (from Leisure Genius)
3) Cludeo (from Leisure Genius)
4) Subbuteo (European Electronic Zoo)
5) Risk (from Leisure Genius)
6) Diplomacy (from Leisure Genius)
7) Ishido (Accolade)
8) Backgammon (CDS)
9) Draughts (CDS)
10) Trivial Pursuit (Domark)

TEN STARS WITH COMPUTER CONNECTIONS

1) Julia Fordham (Atari ST)
2)Peter Gabriel (nearly an Atari ST)
3) Betty Boo (ST and Amiga)
4) Michael Jackson (*Moonwalker* game)
5) Milli Vanilli (er.... loads)
6) David Bowie (Ashes to Ashes video)
7) Matthew Broderick (PC in *Ferris Bueller's Day Off* and in *War Games*)
8) Woody Allen (Mag tape machine in *The Sleeper*)
9) Cliff Richard (an Atari console)
10) Harrison Ford (photo enhancer in *Blade Runner*)

TEN MORE COMPUTER TERMS AND DEFINITIONS

1) GOSUB = avoid and then crash
2) Disk = place where small amounts of data are lost
3) Hard Disk = place where vast amounts of data are lost
4) CAD = computer artist who runs off with your spouse
5) Macro = misspelt computer fish
6) Modem = mechanism for accruing massive phone bills
7) BBS = area for accruing viruses
8) Peripheral = essential device which does not come with price of computer
9) Ping-pong =game to play while engineer fixes corrupted 3
10) Physical Interface = Now then!

TEN SPORTING STAR LICENCES

1) Gretzky Hockey
2) Greg Norman's Golf
3) Jack Nicklaus Golf
4) Gazza I and II
5) Gary Lineker's Soccer Skills
6) John Madden Football
7) Jordan V Bird Basketball
8) Harlem Globetrotters Basketball
9) Buster Douglas Boxing
10) Joe Montana's Football

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AMG-115: BULLRUN - Civil war strategy game.
AMG-120: BOULDER - Boulderdash clone.
AMG-130: AMOEBA INVADERS - Clone of the classic with digitised sounds.
AMG-137: SINKING ISLAND 2 - Text/graphics adventure (2 disks).
AMG-148: BUSINESS 2 - VC Spreadsheet clone. Excellent!!
AMG-149: WORDWRIGHT - Word processor with spelling checker.
AMG-158: AIRWAR - War version of "Flight Simulator" with 3D graphics.
AMG-159: STAR TREK THE GAME - Featuring digitised sounds (1Mb + 2 drives required).
AMG-176: HORROR DEMO - Exploding head dismembered arms. "X" rated.
AMG-182: TOILET PAPER AD - Amazingly funny demo with digitised speech. "X" rated.
AMG-183: SAFE SEX DEMO - Another fantastic digitised demo. Collectors item!!
AMG-507: BLOW FLY - Another digitised speech demo (really funny). "X" rated.
AMG-520: LAUREL & HARDY - digitised animations of the duo.
AMG-515: SCANNERS DEMO - Not for the squeamish. "X" rated (1Mb recommended).
AMG-501: BUDBRAIN DEMO - Must be one of the hottest demos of the year. "X" rated.

ST

ST-151: BOLO - An incredible "Breakout" game. Excellent graphics & gameplay!
ST-150: STOCKS & BONDS V3: Simulation of the stock market featuring digitised sounds.
ST-149: AIR WARRIOR - An "Online" game similar to "Flight Simulator".
ST-148: STAR TREK - Written in STOS with digitised sounds.
ST-162: COLOSSAL CAVE ADVENTURE - The original game that started it all (DS drive).
ST-111: GAMES 15 - Cribbage, Blackjack & Stud Poker.
ST-108: GAMES 12 - Tennis, American Football, Darts & more.
ST-107: GAMES 11 - Monopoly, Othello, Yahtzee & Backgammon.
ST-112: GAMES 16 - Taipan (rule the seas in the 1800's), Trucker (18 wheeler simulation) + more.
ST-100: GAMES 4 - With 2 versions of checkers + chess clone & more.
ST-102: GAMES 6 - Wheel of Fortune!! The game.
ST-304: PLANETS - A guide through the solar system (DS drive).
ST-305: PLANETARIUM - An excellent program. In the top ten PD of 1990.
ST-306: STUMPED - A cricket game simulation.
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WHOLE WIRED WORLD

Steve Gold reports on the build up to the CES in Las Vegas.

STACY 2 COMING SOON

Word from the ST Report on-line newsletter is that Stacy 2 is being readied by Atari for launch this spring. The machine is said to be a major rework on the original ST portable, partly to comply with FCC regulations – which have forbidden sales of the Stacy for home use in the US – and partly to take account of the advances made in the design of the ST over the last few years.

What's most interesting about the Stacy 2, however, is that the machine does not form part of the STe family, but is based on the 'old' ST design technology. Despite this, the machine is reported to weigh considerably less than the first Stacy, and have a battery life in excess of two hours.

FRED FISH AMIGA PROGRAMS ON CD-ROM

By the time you read this, Commodore should be rolling out its Amiga CD-TV system at the Consumer Electronics Show in the US. But what about CD-ROM-based software for the machine? Hypermedia Concepts has pre-empted the launch – the Racine, Wisconsin-based software house has released the entire collection of Fred Fish public domain and shareware software disks in CD-ROM format at a budget price of $69-95. If you order before the end of January, Hypermedia is offering a $20 discount on the disk. But what do you get for the money?

The Fred Fish collection is a well-known source of shareware and PD software for the Amiga. The Hypermedia CD-ROM disk contains the equivalent of all 410 current disks in the collection, indexed and stored in two ways – firstly by disk, and secondly by program in ZIP-ed format. A set of indexing utilities, plus Phil Katz's PKA-Zip file compression/decompression utilities, is included on the disk, which conforms to the ISO 9660 CD-ROM disk format. By adhering to the ISO disk format, the Fish CD-ROM disk can be read in most CD-ROM drives including Mac and PC systems.

So, if – like me – you're saving up for an Amiga CD-TV system, you can still read the programs on another system, passing them over the serial link to a standard Amiga using suitable comms software.

Plans call for Hypermedia to update the CD-ROM disk every four months, to take account of the regular flow of new releases from the Fish collection. The updated disks will be available for $29.95 to registered users of the first disk. Contact: Hypermedia Concepts, PO Box 85303, Racine, WI 53408, United States.Tel: 0101-413-632-3766

HEAD OF ATARI GERMANY TO HEAD FOR THE US?

Remember Elie Kenan, Atari France's manager who (briefly) headed up Atari US late last year, before heading back to France? Well, according to a pre-Christmas edition of *Frankfurter Allegmeine Zeitung*, the leading West German newspaper, the US vacancy is about to be filled by the head of Atari Germany, Alwin Stumpf. The paper's comments are backed up by comments on the Usenet international network, as well as on the Atari areas of several US on-line services, including Compuserve and Genie. Watch this space.

FLYING WITH PORTFOLIO

Paragon Technologies has announced it will release two flight packages for the Atari Portfolio this spring – FX-3 flight pak and FX-4 flight planner. According to Paragon, the FX-3 turns the Portfolio into a DUATS terminal and flight calculator. The most interesting feature of the package is the inclusion of an 80 character x 25 line emulator for the Portfolio. FX-4, meanwhile, is a much more US-specific in that it's a flight planner filled with data on US airports and routes, etc., between them. The idea is that you enter your departure point and intended destination, and the program does the rest – leaving you to control the plane, of course.

Further information from Paragon Technologies on 0101 800 255 9411.

BORED WITH AMIGA DOS? INNOVATRONICS CANDO!

Innovatronics has released version 1.5 of its *Cando* graphical user interface (GUI) overlay system for the Amiga. The Dallas-based company claims that its $149.95 package is superior to the Amiga's existing GUI system, enhancing the Amiga WIMPS interface, as well as offering seamless links into a variety of utilities and applications software.

One module within *Cando* now supports a powerful database facility that the company says allows data of all types and lengths to be indexed, sorted and retrieved at high speed. Other features of the main program include true floating point maths, including double-precision operations, as well maths and trigonometric operations.

What's most interesting about *Cando* is that the package builds – the company claims – on the facilities of AmigaDOS 2.0., despite the fact that the program doesn't need the new version of the Amiga's operating system to run. All this sounds like an option to upgrade to AmigaDOS 2.0 for non-A3000 owners, while getting your hands on an interesting bit of software at the same time.

Contact: Innovatronics, 8499 Greenville, Suite 209B, Dallas, TX 75231, United States.Tel: 0101-214-340-4991. Fax: 0101-214-340-8514.

POWERPACKER PROFESSIONAL FOR AMIGA

Few Amiga users cannot have heard of Powerpacker, the real-time disk compression system for the Amiga. The only snag with the shareware program is that it is slow, although it does cram as much as 60 per cent more data onto a floppy or hard disk. Now author Nico Francois has released a commercial version of the program called Powerpacker Professional. Pricing in at $29.95, the package is much faster than the shareware version, and has a claimed compression ratio of as much as 94 per cent.

Unlike other data compression systems, Powerpacker Professional adds a program header to most executable program files. This allows the program to decompress itself and run in one transaction. This allows the compression system to run transparently, claims its distributor, Jumpdisk.

Bundled with the program are a number of utilities to create standalone versions of packages that will automatically uncrunch themselves and load into memory. This allows users to make auto-uncrunching versions of programs for other users.

Powerpacker Professional sounds interesting. The program will, Jumpdisk claims, run just as effectively on a floppy-based Amiga as on a hard disk-equipped system.

Contact: Jumpdisk, 1493 Mount View Avenue, Chico, California 95926, United States

COMMODORE'S US SHUFFLE

Literally on the eve of the company launching the Amiga CD-TV system at CES in Las Vegas, Commodore International announced that James Dionne is to become its general manager of US operation.

According to Commodore sources, Dionne takes over from Harold Copperman, who moves up to being vice-president of Commodore International, with primary responsibilities for Amiga multi-media strategy. Dionne is a Commodore veteran of some 11 years, most recently he was general manager of Commodore's Canadian sales subsidiary where, according to many on-line reports, he did an excellent job. Copperman, meanwhile, joined the company 1989.

In parallel with the management shuffles, Commodore has also announce it is reducing staffing levels on its US operations. According to on-line sources, the staffing reduction is part of a move towards improved operating efficiency within Commodore as a whole. An unconfirmed on-line message – by a Commodore employee – said that around 25 staff were laid off, primarily in the educational and government supply divisions of Commodore US.

SEGA UNVEILS GAME GEAR

Sega has announced GameGear, a hand-held colour video games console that is pitched head to head with the Atari Lynx system. The GameGear system was due to be formally launched at the Consumer Electronics Show (CES) in Las Vegas last week.

The GameGear system features a 32-colour LCD screen that, like the Lynx, is back-lit, allowing it to be played in almost any light conditions. A TV tuner system – so the screen can be viewed on an ordinary household TV – is scheduled for release this spring.

While the games console itself will retail for $159.95, games cartridges retail for between $29.95 and $34.95. Sega is making ready a library of around 20 titles for launch when the machine begins shipping from the end of this month.

Will the GameGear system take on Nintendo's Gameboy and Atari's Lynx? First reports suggest it will. Sega is aiming for one million units to be sold this year in the United States alone. When the system went on sale last year in Japan, it sold 40,000 units in the first two days. Phew! ■

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Amiga 500 512K Screen Gems pack including 'Back to the Future 2', 'Night Breed', 'The Beast 2', 'Deluxe Paint 2', Days of Thunder' and TV modulator	£379.00
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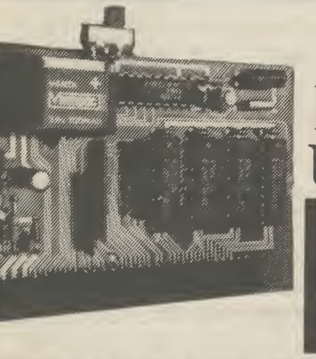

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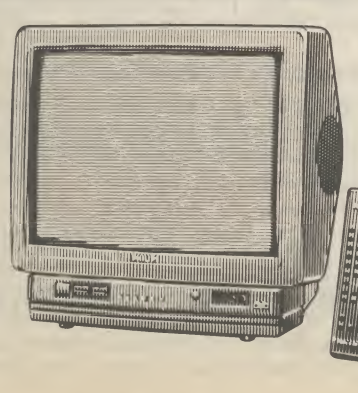

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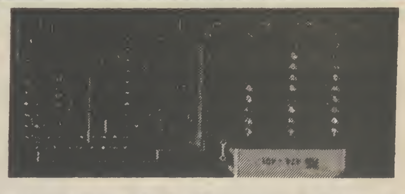

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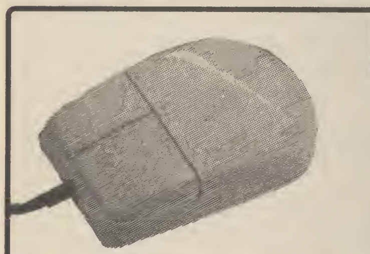

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THE PD COLUMN

A bumper week for Amiga owners in the world of public domain with music, art and explosive action on offer. Adam Waring casts a critical eye.

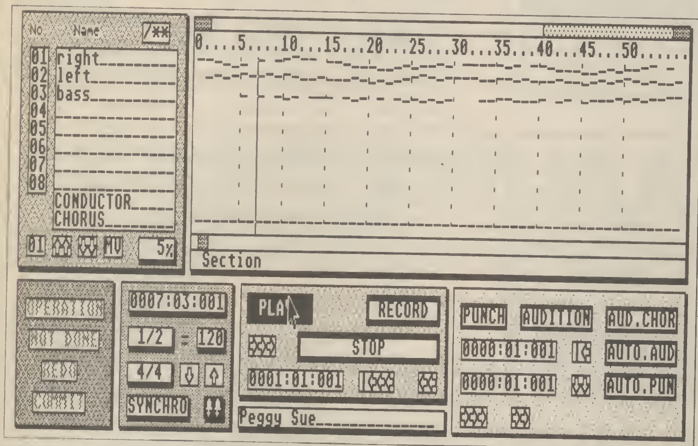
Music Pack • ST • Sphinx Software

Sphinx has come up with a compilation of programs for your ST that could bring music to your ears. It's a selection of all the very best music programs available in the PD scene. Though they are all available elsewhere, this compilation offers so much for so little.

It comprises seven disks, four of which contain powerful music programs. The remaining three consist of libraries of musical instruments and modules for use with the programs.

In addition, a properly printed and very presentable manual accompanies the package so there's no need to quit the program you're working on to look through those doc files. All the information you'll need is clearly laid out and always at hand.

The price of this little lot is just £9.95. So, what exactly do you get for your money?



• Accompanist: the program which comes on disk two of Sphinx's compilation of music programs for the ST enables you to link up and control up to 16 MIDI instruments.

Disk one contains *Noisetracker*, written by a group called The Empire. *Noisetracker* is an ST version of the popular Amiga music program that goes under the same name. It allows four 'voices' to be played simultaneously. The voices consist of digitised samples, so you could have a four piece playing away inside your ST. Of course, there's nothing to say that the digitised samples need to be based on real musical instruments. If you can get hold of the samples then you can play anything you like.

Disk two has *Accompanist*, written by Henry Cosh. The program is designed for controlling MIDI instruments; up to 16 can be linked together and controlled by the software. It can hold over 8,000 notes on a 520ST, rising to more than 58,000 if you're lucky enough to have a megabyte of memory in your machine.

Disk three has the demo version of the *TCB Tracker* that everybody's made such a song and dance about recently (ho ho). Written by ex-demo writing group The Care Bears, the program is regarded as one of best sequencers around. It's very easy to use, and even the least musical person can play around with it in a matter of minutes.

The fourth disk houses *Audio Sculpture* by Syncron Assembly. *Sculpture* boasts the best STE support of any music package. The program itself is in archived format, and on boot-up prompts you to insert a freshly formatted disk into the drive, onto which it saves an executable copy of itself. Then you're ready to rock and roll.

Not everybody is musically talented, so the rest of the disks are packed with 'modules' and instrument samples. Disks five and six have the modules. These are complete tunes for you to load into the program and play. They contain all the information for what each of the channels should be playing, and the data for the instruments. Disk seven con-

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JAM is typeset, laid-out and produced on an Amiga 500 and an Amiga B2000 - living proof that the Amiga is ideally suited to serious pursuits other than playing games. ***JAM*** concentrates on the applications and programming side of the machine, never afraid to go in-depth when the occasion calls for it.

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sists purely of instruments for you to use in your own creations.

Drip • Amiga • Lorenzo's Domain • 701
Calling drips everywhere! *Drip* is a fun game for your Amiga, but it's certainly not for the wet!

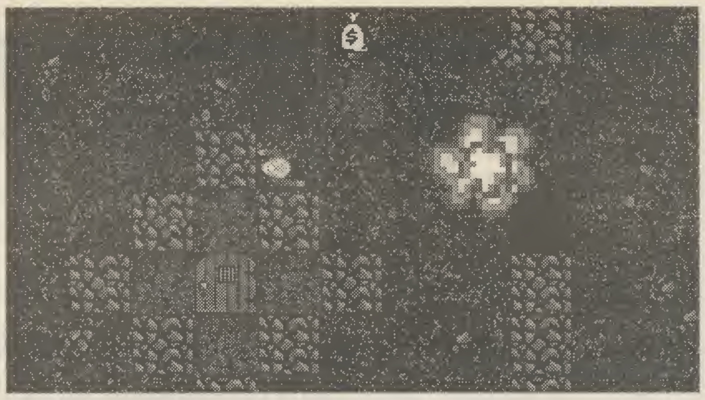
The idea is fairly simple: turn a set of pipes from one colour to another by painting them. To do this you move along the surface of the pipes and as you pass over them they change to your colour. Sounds easy, eh?

However, what may sound a piece of cake at first soon turns out to be rather difficult. There are a couple of baddies roaming the pipe framework too, and they're determined to knock you off your perch.

It's not all gloom and doom, though. Help is at hand in the form of bonus collectables. These can either increase your score or give you the opportunity to get your own back on those pesky pests, by allowing you to chase and chomp them.

You can also hitch a lift from a bubble that floats periodically up the screen. With this you can steer yourself to those hard to access places to paint them your own colour.

It's certainly not a new concept. Painting games have been around since computer games first became popular. The Amiga's capabilities are well used though and there are loads of nice graphical touches, and an excellent funky soundtrack plays along as you move around that metal maze. There are also plenty of challenging levels for you pit your wits against. And if you manage to make it further than level two then you're a better player than I am.


• **Dynamite Dick:** *a frantic search for sacks of loot buried underground.*

Dynamite Dick • Amiga • Page One PD • Games 23
Dynamite Dick is out for all he can get. Buried beneath the ground in an abandoned mine are sacks of loot, and as far as Dick's concerned they're there for the taking.

Unfortunately it's not so easy that he can just march in there, grab the cash, and run for it. The mines with the money are old, have many blocked paths, and are haunted! So Dick has to blast his way through the walls with sticks of dynamite, and keep well out of the way of the baddies.

You need to use the TNT to reach-cut off sections of the map. It is aslo useful for killing the baddies who roam the corridors of the mines. You'd better watch out, though, as contact with them is fatal. And another word of warning: every time you use a stick of dynamite you lose part of the bonus you you receive when you complete a level.

Dick is played from an overhead view. The scrolling is very smooth, and the playing area takes up the entire screen – even taking over the border area. Sound is very good, with loud explosions and digitised squeals signalling Dick's demise. ■

WHERE TO GO

SPHINX SOFTWARE, Erw Fynydd, Carmel, Llanelli SA14 7SG.

Sphinx has loads of stuff for your ST. Most disks in the library are designed for single sided machines, but you may request a 'double up', with two programs on the same disk.

Prices are £1.75 for a single sided disk, and £2 for double sided. If you supply the disk the price plummets to just 75 pence.

PAGE ONE PUBLIC DOMAIN, 46 Hillport Avenue, Porthill, Newcastle, Staffs, ST5 8JZ.

Page One is an Amiga Public Domain Library, so take a page out of its book. Most of the disks are £2.50, whereas the Licenceware will set you back an extra £1.

LORENZO'S DOMAIN, 30 Colquhoun Square, Helensburgh, Scotland, G84 8AQ.

This Amiga library has a very 'clubby' feel. Competitions are run regularly, and they aim to send out your disks within a couple of hours of receiving your order. The disks are dirt cheap too. The princely sum of 99 pence is all it costs for a disk full of delightful PD.

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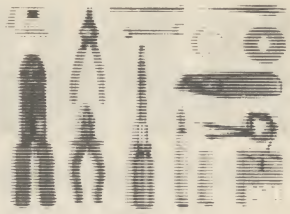
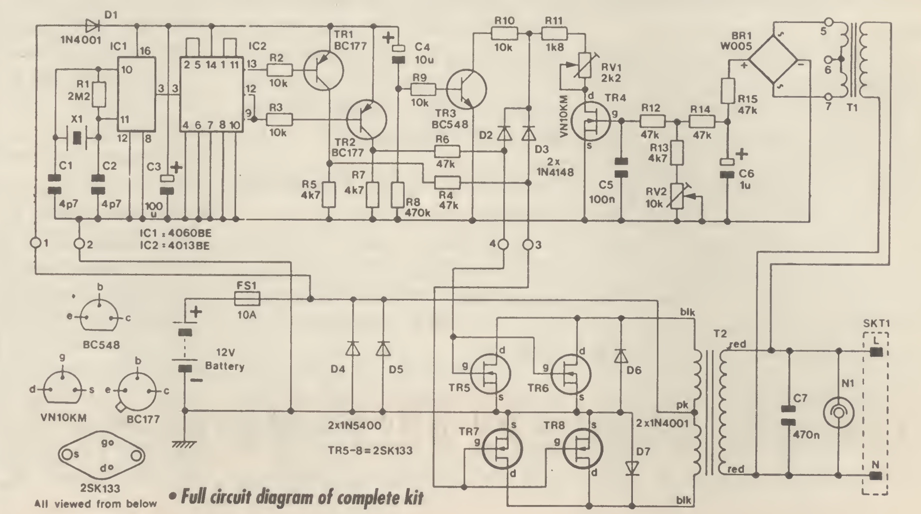


Now that Keith Pomfret has finally got all his bits in the right place he can begin to show you how to start constructing your inverter. Not for beginners – this project should not be taken lightly.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1N4001
IC1
R1
2M2
X1
C1
4p7
C2
4p7
C3
100u
IC2
R2
10k
R3
10k
TR1
BC177
TR2
BC177
C4
10u
R9
10k
TR3
BC548
R5
4k7
R7
4k7
R8
470k
R6
47k
R4
47k
D2
D3
2x 1N4148
R10
10k
R11
1k8
RV1
2k2
VN10KM
TR4
R12
47k
R13
4k7
R14
47k
C5
100n
RV2
10k
R15
47k
C6
1u
BR1
W005
T1
IC1 = 4060BE
IC2 = 4013BE
BC548
VN10KM
BC177
2SK133
All viewed from below
FS1
10A
12V Battery
D4
D5
2x1N5400
TR5-8 = 2SK133
TR5
TR6
TR7
TR8
D6
D7
2x1N4001
T2
blk
pk
red
C7
470n
N1
SKT1
L
N

• Full circuit diagram of complete kit

It's taken a few weeks for the rest of the parts for the inverter project to trickle through but now they're here we can make a start on construction. The case that it was originally going in never materialised, but a replacement from Maplin was a better size anyway.

This isn't a project for a beginner and the simple gauge of whether it's for you or not is to look at the circuit diagram. If you know what the parts are and what they do, you'll stand a good chance of completing it. If you have to struggle to grasp what goes where and why, you could probably benefit from a bit of practice on something simpler.

ASSEMBLING THE PCB

Try all of the components out to make sure that they fit in the right place on the PCB. Pay attention to the polarity of the components. If you're not sure, you can work out which way round the components go from the circuit diagram. I generally start with the components that are a fiddle to fit and work up to the easier ones.

Delicate soldering will be required for the IC sockets where there are several small soldered joints close together.The use of a temperature controlled soldering iron can be handy here. Trial and error on a test piece will show you the optimum heat setting for delicate close work. After all of the small components are soldered in place, there's a transformer to go on the PCB. It is the smaller of the two transformers in the kit This must be bolted down but be careful that you don't damage the PCB.

The PCB must be attached to the box and Maplin suggests that you use 4x6BAx1/2inch nuts, bolts, washers and 4x6BA spacers. That is quite a mouthful but when the job's done, it looks ever so tidy.

All of the major components attach to the base of the box. The heatsinks and mossfets are installed on the outside at the rear to allow dissipation of heat.

The eight way connector strip (white plastic) sits in the centre of the base. The PCB is on the right as you look at the box from the front and the heavy transformer attaches directly to the base on the left.

With all of the components in situ, the wiring is the final job. An inverter produces a variety of voltages and currents so it's necessary to pay attention to the needs of the various parts of the circuits as their wires are soldered in place..

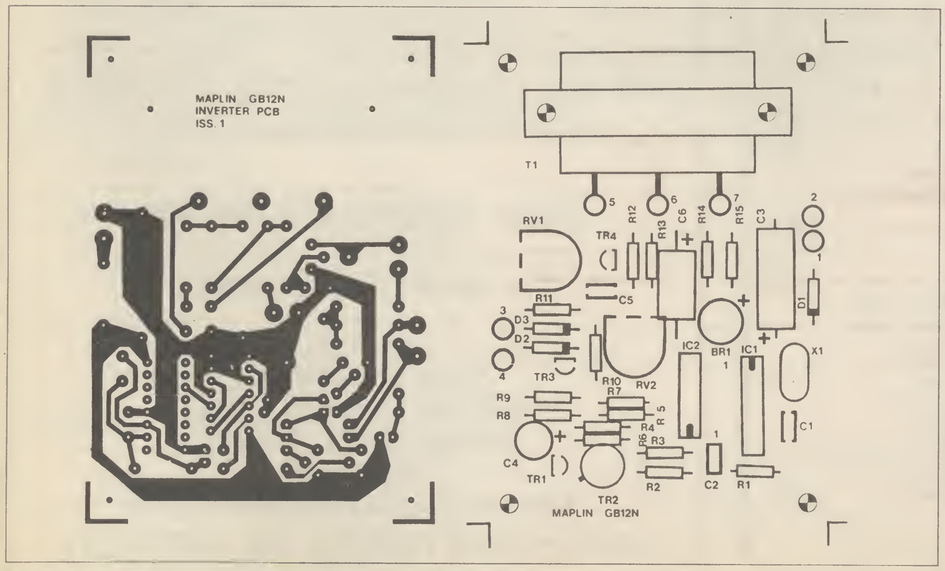
Use a multimeter to check the integrity of the circuit and have a final check to see that all of the components are in place.

Finally, drill the lid of the box to take the 13 amp socket, fuse and indicator light drill and grommet a hole in the rear to carry the input cable from the battery. With these installed and connected, complete the assembly of the box.

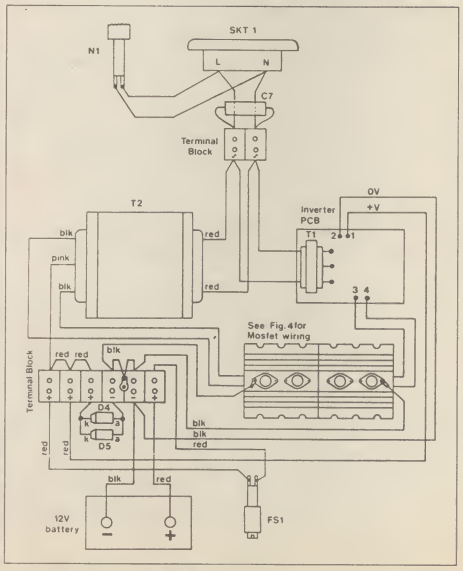
Although the inverter takes its power from a twelve volt car battery, it produces mains voltage at the output. It should be treated with the same respect as any mains power supply. With everything connected, you should have enough juice at the three pin socket to drive a 60 watt bulb. Check everything on the bench and most importantly, be sure that no live connections can brush on the case or any other part that you can touch. Once you're satisfied that everything works, it's time to install it in the car.

In a couple of weeks when you have had time to catch up and get the bits that you forgot, I'll conclude the inverter story with the installation of the inverter in a car of my boss's choice (his Robin probably). ■

Maplin is on 0702 554155 and as well as the inverter kit can supply project book 2 which includes an in depth walk through of every nut bolt and blob of solder in the inverter.


MAPLIN GB12N
INVERTER PCB
ISS. 1
T1
5
6
7
RV1
TR4
R12
R13
C6
R14
R15
C3
2
1
R11
C5
3
D3
D2
4
TR3
R10
R7
RV2
R9
R8
C4
TR1
TR2
R4
R3
R6
R5
R2
C2
R1
IC2
BR1
IC1
D1
X1
C1
MAPLIN GB12N

• Both sides of the purpose designed PCB with component location shown.


SKT 1
L
N
N1
C7
Terminal Block
T2
blk
pink
blk
red
red
Inverter PCB
T1
0V
+V
2
1
3
4
See Fig. 4 for Mosfet wiring
Terminal Block
red
blk
D4
D5
blk
red
12V battery
FS1

• General schematic of full project

EXPRESS EXTRA

Welcome to the bargain basement, where we hand out valuable help and advice on where to go and how to get the best deals when it comes to buying cut-price computers. Plus our regular comprehensive guide to auctions around the UK in the coming weeks.

While Shopping Express is undoubtedly the the perfect way to track down the best bargains in the computer world, many people are still, perhaps understandably, wary of buying products through mail order or through personal ads. This is mainly because you usually cannot see the item you are buying before you hand over your money.

We do everything in our power to make sure that all the advertisements we run are above board. But here are a few tips designed to take the risk out of buying through the post or over the phone.

- Be precise in describing what you want to buy. Leave no room for error. Feel free to go overboard in double checking details - make, model, specifications, colour, size, the page number and name of the magazine in which you saw the advertisement etc.
- Confirm the price you are supposed to be paying. If you are phoning a company check whether there are any hidden extras, such as poatage and packaging.
- Check how the item will be delivered to you and how long it should take. This is especilly important with reader ads where delivery details are rarely mentioned.
- If you are writing off for the product keep copies of all letters. If you are phoning, note down details of when you phoned and who you spoke to.
- If possible enquire about guarantees and servicing. Check the supplier's policy on returns and refunds. With reader ads, it is probably best to make the effort to see the item personally before you hand over any money.
- It is best to to pay by credit card, especially for items over £100, as this provides extra cover under the credit card companies' own insurance schemes. Otherwise use a crossed cheque or postal order. Avoid sending cash at all costs. ■

JANUARY/FEBRUARY AUCTION ROUND-UP

ÍSOUTH EAST

ABTEK (0722 413337)
16 February – New College Helstone Road, Swindon.
900 lots. Auction starts 11am.

CITY COMPUTER AUCTIONS (071 729 7669)
23 January – Unit Four, Gales Gardens, Bethnal Green, London.
A quality auction with 350 high-class lots. Sale starts 6pm.

MCD (0836 726356)*
19 January – St Paul's School, the Ridings, Green Street, Sunbury-On-Thames
2 February – St Paul's School, the Ridings, Green Street, Sunbury-On-Thames
23 February – St Paul's School, the Ridings, Green Street, Sunbury-On-Thames
Auctions start at 10.30am. Viewing and testing on the evening beforehand from 5pm-8 pm, and on the day from 9am.
* Please note the change of phone number.
TECHNOLOGY COMPUTER SERVICES (081 651 3639)
26 January – Kemnal Manor School, Sevenoaks Way, Orpington, Kent.
Auction starts 10.30am. Viewing and testing 9am
9 February – Pickhurst Junior School, Hurst, Bromley, Kent.
Auction starts 10.30am. Viewing and testing 9am.

TRADERDESK (0527 579120)
26 Jan – Harrow Liesure Centre, Harrow, Middlesex.
Auction starts 11am. Veiwing and testing from 9.30am.

SOUTH WEST

TRADERDESK (0527 579120)
23 Feb – BAWA Liesure Centre, 589 Southmeade Road, Filton, Bistrol.
Auction starts 11am. Veiwing and testing from 9.30am.

MIDLANDS

TRADERDESK
9 Feb – National Motorcycle Museum, NEC, Birmingham.
Auction starts 11am. Veiwing and testing from 9.30am.

NORTH EAST

COMPUTER CONNECTIONS
19 January – Speed Ball, Horton Park Avenue, Bradford.
Sale starts 11am. Viewing and testing from 8.30am.

SCOTLAND

TRADERDESK
24 Feb – Bothwell Bridge Hotel, Glasgow.
Auction starts 11am. Veiwing and testing from 9.30am.

Bidding Tips:

- Prices at auctions can be quite a lot lower than in shops, but you will have to pay in full on the day.
- Make sure to get a catalogue before you go along. If you phone the companies they should be happy to supply you with one.
- Set yourself a limit.
- Give your selected items a good looking over and check if there is any warranty. If there is not you still have the rights of a second-hand buyer. Under the Sale of Goods Act you are entitled to a refund if the item is faulty or does not match up to the description given.
- Wait for the auctioneer to call the first bid. He'll come right down if no-one offers.
- Don't be tempted to outbid over the odds. You might come up against a dealer for whom a bargain is just a higher than normal margin.

If you run auctions anywhere or know of any coming up in your area please contact us with the details so that we can make this listing as comprehensive as possible.

Write to New Computer Express, 30 Monmouth Street, Bath, BA2 2BW. Telephone 0225 442244 or fax 446019.

SECOND-HAND PRICE ROUND-UP

As usual, just a few points to bear in mind:

- The following chart is compiled from the reader advertisements we have received for Shopping Express over the last month, and the items listed are those which have been advertised in sufficient quantities to calculate the averages.
- The lower priced products are usually need repair work of some sort.
- The higher priced items are invariably offered as part of a package with numerous add-ons and mountains of software. This is why the higher figures quoted under 'range' can often be higher than the machine will cost brand new.
- Remember, this is only a rough guide, so if you find a PC down your local market for £20, bully for you.

	Range	Average	Trend
Spectrum	£50-110	£75	▲
Spectrum Plus 2	£80-200	£152	▲
*Spectrum Plus 3	£65-260	£175	▼
QL	£60-100	£80	▲
*C64	£25-395	£180	◆
C128	£130-250	£190	New
*CPC464	£100-350	£240	▲
PCW 8256	£70-300	£200	◆
PCW 9512	£350-450	£380	New
*CPC6128	£165-350	£240	▼
520STFM	£200-500	£336	▲▲
1040	£190-380	£300	▲
520ST	£260-285	£270	▼
STE	£160-399	£310	◆
Lynx	£99-200	£145	▼
Portfolio	£280-300	£295	New
*A500	£280-600	£450	▲▲
PC Engine	£99-200	£140	▼
Sega	£60-230	£135	▲▲
]Sega Megadrive	£100-300	£200	▼▼
Gameboy	£80-150	£115	New
Sam Coupé	£140-285	£165	▲
Acorn Electron	£30-175	£100	New
Vic 20	£20-£40	£25	New
Dragon 64	£25-100	£40	New
LC10 Printer	£105-190	£140	▲

* – advertised most frequently
▲ – more expensive than last month
▲▲ – over £50 more than last month
▼ – less expensive than last month
▼▼ – over £50 less than last month
◆ – no movement
New – now selling in significant amounts

It is still very difficult to find the major games computers being sold second-hand without a lot of software being flogged along with them. This is keeping the prices of these machines unbelievably high.

Hopefully, now that Christmas is out of the way there will be a flood of second-hand Ataris and Amigas coming onto the market, which should force prices down. Keep your eyes peeled for soome really good bargains in the next couple of months.

Or else try bartering with these people who advertise such high-priced machines. See if they'll seperate the hardware and software. I would have thought they could have raised more money selling them seperately anyway.

Meanwhile a couple of old classics have suddenly started to appear on the market at extremely low prices. But then, it's going to be difficult getting hold of software for the Dragon or the Vic 20 these days. (If the person selling the Dragon for £100 gets any offers, please let us know.) For the enthusiasts or desperate only!

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◆ Announcements

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SHREWSBURY Amiga Users Group, regular meetings, will be starting in Shresbury soon. Write to Alan Preece, 1 Haughmond Court, Featherbed Lane, Harlescott, Shresbury, SY1 4NJ. Enclose an SAE for info.

FREE Amiga PD disks! (limited offer). Send SAE for details, hurry! Also, Amiga software wanted, send lists to: J.J. Meachen, 59 Lee Road, Harwich, Essex, CO12 3SB.

SERVICES

PD CIRCULAR to be set up send disk with demo or PD disk returned. Ian Mac, 14 Morrison Drive, Glasgow, Scotland.

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SHREWSBURY Amiga user group - info from A. Preece, 1 Haughmond Court, Featherbed Lane, Harlescott, Shrewsbury. Inc. SAE.

STEN! Issue two out now! For your free copy of this Atari ST/STE news disk send disk and SAE to: Paul Sealy, 31 Hartfield Crescent, West Wickham, Kent.

PERSONAL

AMIGA contacts wanted in the UK only. Write to: Johnny Mc Greevy, 215 Listooder Road, Saintfield, Co. Down, N. Ireland.

NEWCOMER to computers is looking for a Commodore 64 user group or helpful person in Southern Ireland, especially near Cork. D. Philpott, 17Meelick Park, Ballyvolane, Cork, Eire.

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◆ SERVICES

ST PD circular to be set up. Send a disk and say what Ram & drives you have to: Ian MacDonald, 14 Morrison Drive, Lennoxtown, Glasgow. All disks returned.

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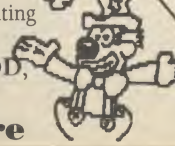

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ADVENTURE PD – Amstrad Adventure PD wants anything adventurous (adventures, utilities etc). Will return tape/disk with other stuff on it.

AMATEUR RADIO (CBM) – write to Simon Lewis GM4PLM Commodore Radio Usrs Group, 69 Irvine Drive, North Clippens, Linwood, Paisley

AMATEUR RADIO 9COMMSO - If interested contact Pat & John Beedie GW6MOJ/MOK BARTG Ffynnonlas Salem, Llandeilo, Wales SA19 7NP. Tel 0558 822 286 MBX 558 822 286

AMIGA CHEAT DISK FANZINE – JS Smith, 45 Maplecroft Crescent, Sheffield S9 1DN.

AMIGA DISK FANZINE – Send £3 for the latest issue to Paul Harthen, 43 Boyds Walk, Dukinfield, Cheshire, SK16 4AX.

AMIGA HELPLINE SERVICES – G Keenan, 21 Skirsa Place, Glasgow, G23 3EE.

AMIGA PUBLIC DOMAIN – 100s of disks. Games, utilities, music, graphics, etc. JJ Meachen, 59 Lee Road, Harwich, Essex, CO12 3SB.

AMIGA PUBLIC DOMAIN. Amiga disk fanzine specialising in PD. Send SAE for details to Chris Jackman,3 Albion Terrace, Lexham Road, Litcham, Kings Lynn, Norfolk

AMIGA PUBLIC DOMAIN USER GROUP – Ashley Tarver, 5 Saunders House, Binswood Avenue, Lemmington Spa, Warks, CV32 5RZ

AMSTRAD BUSINESS USERS - Amstrad Professional User Club, enterprise House PO BOX 10, Roper St, Pallion Ind Estate, Sunderland SR4 6SN. Tel 091-510 8787

AMSTRAD CPC USERS - Tony Baker, United Amstrad User Gp, 26 Uplands Crescent, Fareham, Hants PO16 7JY. Tel 0329 234 291

AMSTRAD CPC HOME USERS – Steve Williams, WACCI, 9 South Close, Twickenham TW2 5JE. Tel 081-898 1090

AMSTRAD LOCAL GROUPS - Amstrad Groups Federation, 4 Sutton Roadc, Gorton, Manchester

AMSTRAD PC SOFTWARE - Colin Smith, Colbar, 10 Penwood cl, Westbury, Wilts BA13

AMSTRAD PCW - PD software: Bob Ellis Tel 0432 761860 For queries: David Axford Tel 0428 56438

AMSTRAD PCW - Bob Ellis "Rowan" 100 St Peters Close, Moreton-on-Lugg, Hereford HR4 8DW. 0432 761 860

AMSTRAD 1512/1640/PPC - PC Independent User Group, The Computer Advice Centre 87 High Street, Tonbridge, Kent TN9 1RX Phone 0732 771 512

AMSTRAD BUSINESS USERS – Amstrad Professional User Club, Enterprise House PO BOX 10, Roper Street, Pallion Industrial Estate, Sunderland SR4 6SN. Telephone 091-510 8787

APPLE II USERS – telephone 051 9284142 for further details

APPLE MACINTOSH. John Lewis, Macintosh user group, Macintosh House, 11 South Parade, Summertown, Oxford OX2 7JL

APPLE SYSTEMS – Irene Flaxman, Apple 2000, PO Box 3, Liverpool L21 8PY.

ARABIC COMPUTING – write to Rich Lackey, Arabits, 9 Bellview road, Worthing, West Sussex BN13 1EY

ASHTON TATE SOFTWARE - Silvia Robinson, Baseline, Ashton-Tate, 1 Bath Road, Maidenhead, Berts 0628 33123. Prestel page 43221

ATARI ALL MACHINES – Colin Hunt, BaPAUG, Wimborne Road, Oakdale, Dorset BH15 3EF

ATARI AND AMIGA PC EMULATOR SUPPORT CLUB – SAE to 153 Parrock Street, Gravesend, Kent, DA1 21ER

ATARI PORTFOLIO - D Gilpin, Atari Portfolio User Group, 84 Cambridge Avenue, Gidea Park, Romford RM2 6QU. 0708 730764

ATARI ST SOFTWARE – write to 16/32 PD library 35 Northcote Road, Strood, Kent ME2 2DH

ATARI ST - Paul Glover, The ST Club, 9 Sutton Place, 49 Stoney Street, Nottingham NG1 1LX. 0602 410241

ATARI ST/STE HELPLINE – We can scan, digitalise and provide loads of clip art. SAE to Nist 53, Lenaghan Park, Belfast, BT8 4JB

BBC MICRO - BEEBUG, 117 Hatfield Road, St Albans, Herts AL1 4JS. 0727 40303

BURMAN'S PD – Amiga PD only 40p a disk. For a catalogue disk with a free game and demos send a blank disk to 41 Pinner Park, Gardens, Harrow, Middx, HA2 6LQ. Membership free.

C64 PD CLUB – E Masaba, 84 Garmoyle Rd, Liverpool L15 3JH

C64 PUBLIC DOMAIN – Phoenix, 64 Plumberow, Basildon, Essex

C64 SOFTWARE LIBRARY – rent, swap or buy original cassettes. Free game when you join. For details send SAE to 12 Dagmar Road, Windsor, Berks, SL4 1JL.

C LANGUAGE - Martin Houston CUG (UK) Houston Technology Ltd, 14 Arden Oak Rd, Sheldon, Birmingham. Tel 021-722 3168

CAMBRIDGE Z88 - Roy Woodward, Z88 Owners' Club, 68 Wellington St, Long Eaton, Nottingham

CD ROM - UK CD-ROM User Group, High Wings, Salem, Treforys, Abertawe 0792 844 370

CALAMUS USER GROUP – getting organised. Contact Dave on 0922 649410 evenings or write to Flat 3, 68 Corporation Street, West Walsall, West Midlands, WS1 3QR

CHESHIRE 16-BIT USERS CLUB – Amiga, ST, PC, Arc at Radley Common community centre, off Poplars Avenue, Orford, Warrington, Friday nights. All welcome. £1 admission.

Get yourself listed!

If you run a user group or bulletin board, don't miss out – fill in this form for a free entry and send it to Express On-line, 30 Monmouth Street, Bath BA1 2BW.

Name of group/BBS ....

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User group/Bulletin board (delete as applicable)

- Write your ad on the in block capitals on the grid below using one letter per block. It will appear in full for the first week, then relevant details will be printed in the main listing after that. Information for bulletin boards should supply details of baud rates, times on-line, and which machines they are aimed at as well as telephone numbers.
- Also, if you know that any of the information on these pages is incorrect or out of date, please inform us as soon as possible.

CHOICE – on-line help. Tel 0308 23224

CHESHIRE NIMBUS USER GROUP – Geoff Nelder, Queens Park High School, Handbridge, Chester

CHURCH ADMINISTRATION - Rev Stoker Wilson, Church Computer User Group, St John's Vicarage, Greenside, Ryton, Tyne & Wear NE40 4AA. 091-413 8281

CID (Computers and Integration for the Disabled) is a registered charity. Tel 0467 24202, ask for Gordon

CLERGY/MEDICAL EDUCATION – Mr T Jones, FREE-ED Shareware/PD 85 Stoke road, Taunton, Somerset TA1 3EL. Tel 0823 321 481

COBOL LANGUAGE - Allen Reavie 22 Mourneview St, Portadown, Northern Ireland. BT62 3AW

COLECO ADAM - Keith Mamer, UKAS 33 Homer Road, Croydon CXR0 7SB

COMMODORE ALL MICROS - Jack Cohen, ICPUG 30 Brancaster Road, Newbury Park, Ilford IG2 7EP Tel 081-346 0050 home: 081 579 1229 day

COMMODORE AMIGA - UK Amiga Users Group. Contact 144 Charles Street, Leicester LE2 0OD. Telephone 0533 510066 voice; 0533 517615

COMMUNITY COMPUTING - Community Computing Network 2nd Floor, 35 Pink Lane, Newcastle, NE1 5DW. Tel 091-261 0317

COMPUCORP. Compucorp University users group c/o Compucorp, Cunningham House, Westfield Lan, Kenton, Middx

COMPUNET – write to Independent Compunet Club, 148 Furzehill road, Boreham Wood Herts. WD6 2DX

CONFERENCING - Compulink, suite 2, The Scantuary, 23 Oakhill Grove, Surbiton, Surrey KT6 6DU Voice 081-390 8446. CIX BBS 081-399 5252

CPM & MSDOS Users Group – 42 Birkbeck Road, Wimbeldon, London SW19 9NZ. Tel 081-543 0824

CRYPTOGRAPHY & CODES - Mike Barlow, American Cryptogram Association 5052 Chestnut Avenue, Pierrefonds, Quebec HBZ 2A8 Canada

DATAEASE USER GROUP – High-Tech House, 10 Blackfriars Street, Norwich, NR3 1SJF
ECONET - Michael Ryan, Econet User Gp, Balkeerie Cottage, Eassie by Forfar, Angus DD8 1SR

DATA PD LIBRARY for Amstrad CPC users. Send SAE, tape/disk and 50p to Kingsmill 202 Park Street Lane, Park St, St Albans, Herts AL2 2AQ

DISABLED - Jeff Hughes, Special Needs User Group, 39 Eccleston Gardens, St Helens WA10 3BJ 0744 24608

DRAGON - Paul Grade, National Dragon Users Group, 6 Navarino Road, Worthing, Sussex or tel 0903 207585

EDINBURGH AMIGA OWNERS – I would like to form a user group for all us over 18s (we can go to the pub that way). Interested? Please phone me on 332-4938

EDUCATION - Charles Shannon, TECUG, 35 Wellington St, Gravesend, Kent DA12 1JG. Tel 0474 567 931

EIGHT-BIT BACK-UP 8-bit user group for all. 25p plus SAE. to: 8-bit back-up, 1 Northolme Close, Grays, Essex.

EINSTEIN - Graham Bettany, UKEUG 80 Dales Road, Ipswich IP1 4JR

EINSTEIN PD USER GROUP – Help and advice for all Einstein users. Over 100 disks of PD software. Send SAE to SW Knowles, 23 Howldsworth Rise, Arnold, Nottingham, NG5 8HZ

ELMSOFT PUBLIC DOMAIN SERVICE for the ST any weekend at Camden canal market, Haven Street, London

EMULATE. For Amiga, Amex. With monthly newsletter. Write to Pat 12b Northbrooks, Halrow, N Essex

ENTERPRISE – William Creaser, 6 Provident Street, Shaw, Oldham, DL2 8AQ. Independent Enterprise User group. Tel 0706 881382 from 7pm to 9pm

ENTERPRISE - Tim Box, Independent Enterprise User Group, 50 Holdenhurst Avenue, Finchley, London N12 0HX. Tel 081-346 8032

ENET (like Econet) - T K Boyd, Enet (Amcom) User Gp, Seaford Cottage, Petworth, West Sussex

EXMOORE SOFTWARE – Queen Street, Lynton, N Devon EX 35 6AQ

FIND YOUR LOCAL CLUB - John Dale, Banc y rhosyn, 14 Bron Y Glyn, Bronwydd Arms, Carmarthen SA33 6JB. 0267 230 771

FORTH Language - Douglas Neale, FIG (FORTH Interest Group) UK, 58 Woodland Way, Morden, Surrey SM4 4DS

FRACTALS/CHAOS THEORY - Andy Lunness, 69 Bronte Avenue, Bury, Lancs BL9 9RN. Telephone 061-764 6469

GENEALOGISTS - Computer Group, Society of Genealogists, 14 Charterhouse Buildings, London EC1M 7BA. 071-251 8799

GENERAL AMIGA – disk based magazine for the Amiga. Only £1.50 per issue. Send order to 19 Earn Court, Alloa, Clacks, FK10 1PT

GENERAL HOME MICROS - Steve Winter, Chic Computer Club, PO BOX 121, Gerrards Cross, Bucks SL9 9JP 0753 884473

GUNNING PD ST PD – 47 Auchingane, The Tryst, Edinburgh, EH10 7HX

GUAGE - Martin Houston CUG (UK) Houston Technology Ltd, 14 Arden Oak Rd, Sheldon Birmingham BS26 3LX. Telephone 021-722 3168

HITACHI MBE 16002 PC - Bruce Ainge HICUPS 16 Nine Acres Road, Cuxton, Kent ME2 1EL. 0634 715759

HOUSING ASSOCIATIONS - Caroline Maries, Micro Users Ltd, Beaver Housing society, 23 Lewisham High Street, London SE13 5AF. Telephone 081-318 1126

HEALTH WORKERS - Sue Mckendrick, Healthlink, 164 Windsor Rd, Ashton-in-Makerfield, Wigan WN4 9ES. Voice: 0942 712 385

IBM PC USER GROUP – PO BOX 360 Harrow HA1 4LQ.081-863 1191 BBS 081-863 6646

JOMAC USER GROUP – Spectrum and Amiga tips and pokes sent every month. Write with SAE to Jomac's, Filey Grove, Rhodes Street, Hull

JUPITER ACE – John Charter, Jupiter Ace Forth User Group, 17 Spring Wood Close, Dunston, Chesterfield S41 8BS. Tel 0246 237555

LOCAL AUTHORITIES – Local Authority Micro User Group, John New, Borough Engineer's Dept, Municipal Offices, North Quay, Weymouth, Dorset DT4 8TA.. Tel 0305 785101 ext 272

LOTUS PRODUCTS - Lotus User Group, 79-80 Peascod St, Windsor, Berks SL4 1DH. Telephone 0753 841686

LYNX – R B Jones, Lynx User Group, 39 Ashton Close, Needingworth, St Ives, Cambs

LYNX DISK USER GROUP – J Koushappas. 172 Pasteur Gdns, London N18. Tel: 081 807 3859

MEGADRIVE CONSOLE CLUB – Megadrive games new, old, bought, sold. Also exchange games. Andrew Stanford (0789) 764039

MEMOTECH FILE – 93b StJohns Road, Biddulph, Staffs ST8 6LL

MEMOTECH - Phil Eyres - Memotech Owners Club, 23 Denmead Road, Harefield, Southampton SO2 5GS. Tel 0703 585106

MICROSOFT WORD - Lesley Port, Folly House, Madeira Walk, Bachelors Acre, Windsor, Berks. Tel 0753 831001

MICRO-DESIGN USER GROUP – a new group for those PCW owners requiring assitance and advice with this DTP package. Large clip art library available. Phone Phil on 0709 543390

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MIDI/MUSIC – Spectrum music machine/MIDI user group. Magazine on tape, plus programs and lots more. For more details contact Sean Sanderson on 05242 62258

MOTOROLA 68xxx MICROS – write to Rick Applegate, 68 Microgroup, 8 Great Cob, Springfield, Chelmsford, Essex. BBS tel 081-316 7402

MSX SYSTEMS – write to Keith Neal, MSX Link, Austerby House, 80 Austerby, Bourne, Linconshire PE10 9JL

NASCOM/80-BUS/CPM - Scorpio Systems, PO BOX 286, Aylesbury, Bucks HP22 6PU.Tel 0296 624868

NEWBRAIN - Ron Bury, NewBrain Support Grp, 70 Cranberry Lane, Darwen, Lancs BB3 2HL. Tel 0254 771891

NIMBUG – write to 13 Belle Vue Ave, Gosforth, Newcastle-upon-Tyne NE3 1AH. Tel 091-285 7806

NW ARCHIMEDES USER GROUP – Meets every Friday at Citizens Advice Bureau, next to Spectrum arena in Birchwood, Warrington. Ring Paul on 051-426 3915 after 6pm

OS/2 - Karen Burns, OS/2 User Group,Cecily Hill Castle, Cirencester, Glos LG7 2EF. Tel 0285 655888

OSBORNE/CPM/MSDOS – write to Jeremy Browne BOOG, 102a Aldershot Road, Fleet, Hants GU13 9NY. Tel 0252 621745 voice or 626233 BBS

PC/PD CLUB – write to 48 King William Drive, Cheltenham, Glos, GL53 7RP

PC SOFTWARE – PC Serve, 1147 Greenford Rd, Greenford, Middx UB6 0DP. Tel 081-864 2611, BBS 081-864 2633

PHILOSOPHY APPLE - G Haines, Chinese Room Club, 43 Cornwallis Gdns, Hastings, East Sussex TN34 1LX. Tel 0424 714 102

PICK OPERATING SYSTEM - Hugh Kellt, UK Pick Users Assocn, PO BOX 907, London N10 2SB. 081-462 4666

PRESTEL - Andy Leeder, ClubSpot 810, Church Farm, Stratton St Michael, Norwich, Norfolk, NRQ15 2QB

PSION ORGANISER - Mike O'Regan, IPSO, 130 Stapleford Ln, Beeston, Nottingham NG9 6GB. Tel 0602 735482

RESEARCH MACHINES - Steve Rochford RM National User Group, George Stephenson High School, Southgate, Killingworth, Newcastle NE12 0SA. Tel 091-268 2002

REVELATION (PICK) — write to Malcolm Frame, UK Revelation User Group, 136 Saint Albans Road, Watford WD2 4AE or Telephone 0923 35515

R:BASE – write to Mrs Tansy Beal, R:Base User Group c/o Room A2044 BBC Woodlands, 80 Woods Lane, London W12 0TT. Telephone 081-576 7187

S&T PD for the ST. Large selection of PD from £1. Send £1 or a disk and 50p for a list. All prices include postage and packaging. Send cheque or PO to Simon Eve, S&T PD, 6 Crediton Road, London, NW10 3DU

SA40 User group – write to Roy Williams, 17 Grove Road, Acton, London W5 6AW.

SANYO MBC-550 - M H Syed, Wistaria, 53 Acacia Grove, New Malden, Surrey KT3 3BP. Tel 081-942 9009

SCHNEIDER EURO PC - Alex Kefford, SEPUG, 11 Crabbet Road, Three Bridges, Crawley, West Susex RH10 1NF

SCIENTIFIC PC USERS – write to Tim Bunning, SPCUG PO BOX 17, Retford, Notts DN22 6BQ Tel 0777 709009

SEGA SWAP CLUB – Exchange your old megadrive/master system carts –10 Sandwith Road, Todwick, Sheffield, S31 0JP

SERIOUS GAMER – Flat C, 43 Colvestone Crescent, London E8 2LG. Tel 071 241 5446.

SERVICES USERS - write to Squadron Leader G Howson, Services Personal Computer Association, Stlk Eng 15a HQSTC RAF High Wycombe, Buckinghamshire

SHARP USERS CLUB – contact Andrew Ferguson, 11 Harcourt Close, Henley-on-Thames, Oxon RG9 1UZ. Tel 0491 574850 evenings only

SIRIUS – Simon Sheppard, ISSUE PO BOX 222, Brighton BN1 3BR

SHREWSBURY AMIGA USER GROUP – informal meetings and lots more planned. Write with SAE to A Preece, 1 Haughmond Court, Featherbed Lane, Harlescott, Shrewsbury, SY1 4NJ.

SOFTWARE EXCHANGE – send an SAE for information to 13 Bourneville Lane, Birmingham, B30 2JY or phone 0860 444594 from12pm to 10pm

SOLITUDE MOUNTAIN – Friendly new Amiga user group. Send blank disk or 50p to 565 Heathway, Dagenham, Essex

SORD M-23 – B Nicholson, Schlumberger Norge A/S Bjergstedveien, 4007 Stavanger, Norway. 474 657002

SMART SYSTEMS USERS – write to Francis Barton, Basement Holy Rosary church, Louis Street, Chapeltown, Leeds LS7 4BP. Tel 0532 629202

SOUTHERN AND DISTRICT. PC and ST user group.Tony Lowes 61A Broadway West, Leigh on Sea, Essex S59 2BX

SPECTRUM PLUS 3 USER GROUP – monthly magazine. 57 Lovers Walk, Dunstable, Bedfordshire, LU5 4BG

SPECTRUM DISCOVERY CLUB – magazine on disk for the Opus Discovery Disk Drive and the Sam Coupé. BD Mumford, 57 St Saviours Road, West Croydon, Surrey, CRO 2XE

STEN – the ST enthusiasts newsletter. Dave Mooney, 14 School Road, Morningside, Newmains, Lanarkshire. Tel 0698 382380.

STOS magazine, out every month.Send an SAE for full details to 11 Shore Crescent, Bishops, Waltham, Hants SO3 1DZ

SUPERPROJECT - Geoff Groom, 3 Sunnymeade Ave, Carshalton Beeches, Surrey, SM5 4JA.. Tel 081-643 3336

SYNCROSOFT – Exclusive 64 computer information. Hardfacts, trouble shoots, pocket book. £2.95 to join, including p&p. Make cheques to Syncrosoft and send them to 9-10 Morland Gdns, Southall, Middx UB1 3DY

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TCS PD – over 250 disks to select from only 99p. Send SAE to 40 Upton Gardens, Tarring, West Worthing, Sussex.

TANDY/MS-DOS - Roger Storrs, NATGUG Oakfield Ldge, Ram Hill, Coalpit Heath, Bristol BS12 2TY. Telephone 0454 772 920

TEXAS T199/4a - Peter Brooks, International TI User Group 96 Banbury road, Oxford OX2 6JT. Telephone 0865 510822

THUNDERNEWS – CBM 64 user magazine on disk/tape. Send sae for details and competition to 159 Hough Road, Wallsall, West Midlands WS2 9BG

TIUGUK – TI99/4A user group UK for S/W on disk, tape and module. Offers magazine and help. Write with SAE for more details to Peter Walker, 24 Bacons Drive, Cuffley, Potters Bar, Herts EN6

TRANSPUTER - Howard Oakley, Transputer User Group, Brooklands Lodge, Park View Close, Wroxall, Ventnor, Isle of Wight

TYPECAST! – PD library for the ST/STE. DTP, WP, clip art and art programs. Paul Sealy, 31 Hartfield Crescent, West Wickham, Kent BR4 9DW.

UNIX USERS – UKUUG Secretariat Owles Hall, Buntingford, Herts, SG9 9PL. Tel 0763 73039 /73255 (fax)

VENTURA PUBLISHING - VPU (Ventura Publisher User group) Linda Liddell VPU c/o LLA Lound House, Forncett St Mary, Norfolk, NR16 1JP. Tel 0508 41580

WORDPERFECT – Michael Norman, Wordperfect User Group (UK) Dove Barn, Manor Farm, Wootton Woodstock, Oxon, OX7 1DX. Tel 0993 812 670

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Consett Forum	0207 506179	Hst
Corby Town Opus	0536 205113	V21/22/22b/23
Cornwall Gate Opus	0752 848806	V21/23
Cp/m User Group	0753 868196	V21/22/22b/23
Critical Mass Bbs	0727 56939	V23/23v
Crown Green	071-245 1512	V21/22/22b/23
Crystal Tower	081-886 2813	V21/22/22b/23
Cure	0604 27865	Hst
Cv Database Bb	0427 810211	V22/22b
Cymrutel	0492 49194	
Cynotel	081-346 2816	V23v
D.i.e.	061-434 9907	V21/22/22b/23
Dabbs	0846 693067	V21/22/22b
Dambusters	0203 333195	V21
Dark Crystal	081-207 2989	Hst
Dark Halo	0392 434477	Hst
Dark Side	0446 33729	V21
Darkhaven	0604 413716	V21/22/22b/23
Data Network	081-478 5464	V21/22/22b/23
Datasel/wanderland	081-680 5330	V23
Datasoft Opus Bbs	0460 54615	V21/22/22b/23
Datatrade Qbbs	0536 725180	Hst
Dbase User Group	0532 842213	V21/22/22b
Dce Board	0296 88165	V21/22/22b
Dcs	081-879 7578	V21/22/22b
Deep Thought	0634 683696	Hst/v32
Desert	0244 550332	V21/22/22b/23
Diamond Opus	0791 86504	Hst/v32
Diggertel #1	0925 411265	V21/22/22b/23
Digital Matrix	021-705 5187	V21/22/22b/23
Direct-line 1	081-841 1847	V21/22/22b/23
Direct-line 2	081-842 2030	V21/22/22b
Domain Bbs	081-773 2422	V22/22b
Dragon'S Tower	081-202 0709	V21/22/22b
Dunedin Blackhole	031-669 2974	
Dwarfen Realm	0376 501036	V23v
Ebbs-1	0274 541156	V21/23/23v
Eddie'S Bbs	0635 71324	V21/22/22b/23
Edinburgh Castle	031 334 7043	HST
Empirical Research	0543675158	V21/22/22b/23
Empyrion	0792 580781	V21/22/22b/23
End To End	0376 84644	V21/22/22b/23
End Zone	0524 752245	V21/22/22b/23
Engineers Workbnch	051-327 7036	V21/22/22b
Eureka Gateways	0603 250689	V23/23v
Eureka Ii	081-683 0629	V21/22/22b/23
Exchange S/w	0767 5051	V21/22/22b/23
Eye-2	0525 715789	V21/22/22b/23
Fal Opus	0736 794827	V21/23
Falcon Bbs	081-527 4165	V21/22/22b/23
Family Skeletons	0480 812097	V22b
Fen Tiger	0954 210692	V23v
Fido Uk1	0734 713909	V22/22b
Firm	0273 513872	V23v
Flight Path	081-759 1957	V22/22b
Focus International	0905 795002	
Focus Tbbs	0303 42690	Hst
Focus Uk	0905 774477	V21/22/22b/23
Forth View	031-660 3474	V21/22/22b/23
Forum-80 Hull	0482 859169	V21
Fox'S Den	0689 27085	V21/22/22b/23
Free Net One	0767 51972	V21/22/22b/23
Freelance Lynx	0480 406261	V21/22/22b/23
Friday The 13th	0642 224833	V21/22/22b/23
Fuzzy Logic	0634 200707	V21/22/22b
Gabbs	0705 524805	V21/22/22b/23
Gallery Qbbs	081-847 2795	V21/22/22b
Game Over	0752 848070	V21/22/22b/23
Games Online	0273 699200	
Gaslamp	0706 358331	V21/22/22b/23
Gaugonzola Bbs	0453 511112	V21/22/22b
Gnome At Home	081-888 8894	V23v
Gods	081-994 9119	V21/23
Golly!	0734 320812	V21/22/22b/23
Goobtel	0602 706307	V21/23
Good Life	081-541 0187	Hst
Gopherit'S Box	061-320-3208	V21/22/23
Gourmet	0474 536654	V21/22/22b
Grainstore	0905 770198	V21/22/22b
Grenadier	0825 762803	V21/22/22b
Hacker'S Delight	0702 523853	V21/22/23
Halfwits Bbs	0272 340310	V22/22b
Hamnet	0482 465150	V21
Harlequin	061-945 3612	V21/22/22b/23
Hastings Bbs	0424 717919	V21/22/22b/23
Hawk'S Castle	0344 411621	Hst
Hazzard Bb	071-737 0505	V21/22/22b/23
Health-data	081-986 4360	V23v
Heartbeat	0734 352032	
Hilary's Board	0277 233468	V21/23
Hot-air Opus	0579 70347	V21/22/22b
Humber Bridge	0482 850785	V21/22/23
Ichthus (trinity 3)	0734 461466	V21/22/22b/23
	0903 700771	V21/22/22b/23
Index Linked	0227 770403	V21/22/22b
Infocomm UK	0895 72021	V21/V22/V22
BIS.Intel Ace	0832 73003	V23v
Islington Bbs	071-704 0760	Hst
	071-226 1248	V21/22/22b/23
Jabulon Bb	0254 59352	V21/23/23v
Jersey Bbs	0534 37779	V21/22/22b/23
Jersey Opus	0534 39389	V21/22/22b/23
Jocks Away!	031-225 5368	V21/22/22b/23
Jolly Fisherman	0754 67796	V21/22/22b/23
Jolly Roger	081-742 1640	V21/22/22b/23
Jusavo	0324 32414	V21/23
Just The Place	0705 258694	Hst
K-wood	0608 83458	Hst
Kashmir'S Bbs	0472 347882	V21/22/22b/23
Kernow Bb	0209 821670	V21/22/22b/23
Key-board	0908 668398	Hst
Keydata	081-676 0072	V23v
Kidlington Bbs	0865 56703	V21/22/22b
King Of The Castle	0233 620228	V21/22/23
Kirklees Opus	0484 665415	V21/22/22b/23
Kleopatra's Pyramid	0602 384281	V21/23/23v
Komputer Knldge	0844 274066	V21/22/22b/23
Kybernesis	081-673 7294	V21/22/22b/23
Labyrinth	051-724 4458	V21/23
Lamplight Qbbs	0705 811531	V21/22/22b/23
Laser Tbbs	0532 438430	V21/22/22b
Lau'S Ql Bb	081-751 6096	V23v
Lightfinger's Place	0202 485723	V21/22/22b/23
Linelight	0580 212043	V23v
Linx Bbs	0522 511277	V21/22/22b/23
Liquorice Allsorts	0633 279985	
Liverpool Mailbox	051-428 8924	V21/22/22b/23
Liverpool Ros	051-931 4271	V21/22/23
Loch lomond	0389 55762	V22/v22bis
Loft	0442 230461	V21/22/22b/23
Logical BBS	0772 623167	300-2400
Log On In Tynedale	0434 606639	V21/22/22b/23
London Bb	081-455 6607	V21/22/22b/23
London City Mag	081-468 7648	V21/23/23v
London Connexion	081-667 1313	V21/22/22b/23
London Embassy	081-366 1778	Hst
London Guest Hse	081-748 0974	Hst/v32
London Mail Centre	081-534 1200	V21/22/22b/23
London Metropolis	081-519 1055	V21/22/22b/23
Loony Bin	0703 787489	V21/23
Mabbs	021-444 8972	V21/22/22b/23
Mach II Bbs	0242 260 685	V21/22/22bis
Mactel Hq (grn Box)	0602 455444	V21/22/22b/23
Mactel Metro	081-543 8017	V21/22/22b/23
Mactel Phoenix	0473 610139	V21/22/22b/23
Madness Bbs	0603 300947	V21/22/22b/23
Magic Castle Bbs	021-430 3761	V21/22/22b/23
Magic Mushroom	0361 83641	V21/22/22b
Magnum	0274 547006	V21/22/22b/23
Magrathea	0376 24402	V23v
Manor	0980 863031	V21/22/22b/23
Marctel	081-346 7150	V21/23/23v
Matrix	051-255 0225	V21/22/22b/23
Mbbs Leconfield	0964 550745	V21/22/22b/23
Mbbs Mitcham lic	081-648 0018	V21/23
Medway	0634 280031	V21/22/22b
Mektronic Cnsltnts	061-773 7739	V21/22/22b/23
Mercianet	0203 611943	V23v
Merkinstead	061-434 7059	V21/22/22b/23
Merlin	0443 834179	V21/22/22b/23
Mgbbs	0443 733343	V21/23S
Micro Live Bb	081-567 6500	V21
Micro Update	081-877 1529	V21/22/22b/23
Microdeal	0726 65422	V21/22/22b/23
Microlog	0422 71921	V21/22/22b/23
Microview!	081-509 0729	V23v
Midget Gem	0748 834836	V21/23
Midnight Caller	0633 279243	V21/22/22b/23
Mind Boggles	0362 762868	V21/22/22b/23
Mininet 3	0642 672813	V21/22/22b/23
Miracom Support	0473 232540	Hst
Mirage	061-652 1242	V21/22/22b/23
Mirror Ii	0628 810889	V21/22/22b/23
Mirrorworld/quest 1	0883 844044	V23
Mission Impossible	0602 654329	Hst
Mk Board	0908 311005	V21/22/22b/23
Mkbbs	0908 504556	V22/22b
Monkey Tree	0952 677002	V21/22/23
Monusci	0293 545665	V21/22/22b/23
Motor Exchange	0484 435314	V21/22/22b
Multi-bbs	041-649 9043	V21/22/22b/23
Murdoch'S Hangout	021-711 2620	V22/22b
Murky Caverns	081-426 9386	Hst
Mwcfe	0926 421844	V22bis
My Little Phoney	0865 773277	V32/HST
Nicc Mid-west	0341 250377	V21/22/23
Nite Life	071-976 6807	V21/22/22b
No Escort Required	081-200 3817	Hst
No.1 Bbs	081-958 1689	V21/22/22b
Norpac	0434 608324	V21/22/22b
North Wales Bb	0978 88372	V21/22/22b
North Yorks Qbbs	0423 868065	V22/22b?
Northern Lights	0768 773685	V22/22b
Norwich Onion Bbs	0603 423305	V21/22/22b/23
Nova	0455 553371	V21/22/22b
Nova-net	0274 370760	V22
Odd-ball	081-679 2583	V21/22/22b/23
Open Access	081-427 3974	
Optix	0482 872294	V21/22/22b/23
Organic Garden	081-464 3305	V21/22/22b/23
Out Of The Blue	081-668 7667	V21/22/23
Owl Service	0532 605876	V21/23
P'S & Q'S Tel	051-236 3105	V21/22/22b/23
Pacific Lightning	0732 845338	V22/22b
Packet Bbs	081-547 1479	V21/22/2
Packet Place	0484 435620	V21/22/22b
Palm Beach	0303 265979	V21/22/22b/23
Pazaz Viewdata	0383 620259	V23v
PC Access	071-608 0081	V21/22/22b/23
PC Forum	0322 335348	V21/22/22b/23
PC Serve Shop	081-864 2633	V21/22/22b/23
PC Serve Softnet	0895 420164	V21/22/22b/23
PC Serve Storehouse	0494 728094	V21/22/22b/23
Pc-vax Opus	081-800-3549	V21/22/22b/23
Pcamiga Bbs	0602 735119	V22/22b
Peacenet West	0895 448998	V23v
Pecan Software BBS	0272 248076	V21/22/22b
Penguin	0943 830820	V21/22/22b/23
Phantom	0226 340425	V21v/22v/23
Phoenix	0249 817704	Hst
Piston Popper	0424 853361	
Plug-ole	021-472 0256	V21/22/22b/23
Plus And Minus	0559 322766	V21/22/22b/23
Poacher	0476 62450	V21/22/22b/23
Polynet Bb	071-580 1690	V21/22/22b/23
Port Of Call	081-391 5779	V21/22/22b/23
Power Play Qbbs	0698 423669	V21/22/22b/23
Power Tower	0533 880114	V21/22/22b/23
Prestonet	0772 612462	V23v
Project Bbs	0384 401770	V21/22/22b/23
Prometheus	081-300 7177	V23v
Proximity	0793 480028	V21/22/22b/23
Publishing Shop	091-261 5228	V21/22/22b/23
Purely Pc	0232 645942	V21/22/22b
Pyramid	071-239 0871	V21/22/22b
Pyroto Mountain	0895 59071	V21/22/22b
Really Interesting	0582 414991	
Reflex Bbs	0703 685527	V21/22/22b/23
Regency Bbs	0542 33050	V21/22/23
Remote!pcw	0555 851887	V21/22/22b/23
Rivendell	0602 640488	V21/22/22b/23
Rm Tech. Support	0865 796431	V21/22/22b/23
Road Runner	061-483 4105	V21/22/22b/23
Roamer I	0292 45345	Hst
Royalink Uk	0962 66807	V21/22/22b
SAC Bbs	0242 260685	V21/22/23/22b
Sas Bbs	0742 325232	V21/22/22b/23
Satellite Southwest	0392 53116	V21/22/22b/23
Scabs	0909 479080	V22bis
Scary Monster	0734 320297	Hst
Scot Air	0505 36036	V21/22/22b/23
Scothelp-st	031-313 2734	V21/22/22b/23
Scottish Opus	041-880 7863	V21/22/22b/23
Scottish Wildcat	0674 671141	V21/22/22b/23
Scs One	0444 236002	V22b
Sector	0772 454328	V23v
Semaj Qbbs	0303 862415	V22/22b
Sentinel Bb	0628 781429	V21/22/22b/23
Shades	0342 810905	V23
Shadowfax	0252 528146	V21/22/23
Shadowland	081-897 0488	V21/23
Shareware Library	0424 83654	V22/22b
Shasby'S Lair	0772 561066	Hst
Sherwood Forest	0602 397113	V21/22/22b/23
Short Circuit	0273 462967	Hst
Sid (acorn Service)	0223 243642	V23v
Signal Box	081-337 6583	V21/22/22b/23
Sin Bin	0532 661536	V23
Sirius	081-542 3772	V21/22/22b/23
Sirius Ii	0494 778425	V21/22/22b
Skull's Tower	081-943 1194	V21/22/22b/23
Sky-line	0603 742273	V21/23/23v
Skyline 1	0234 741691	Hst
Softmatic Bbs	0733 322540	V21/22/22
Software Source	0892 661149	V22/22b
Sorcerer's Dungeon	0636 815705	
Sounds Of Mercia	0203 682896	V21/22/22b
South Lincs BBS	0780 63954	
Sparx	0793 480287	V21/22/22b/23
Split Infinity	0342 712248	V23v
Pook Bbs	0268 767365	V21/22/22b/23
Sphere BBS	0294 221350	V21/22/23/22b
Sputnik Spitfire	0501 31754	V21/22/22b
St London Bbs	081-443 2432	V21/23
Stabb	0793 855176	V21/22/23/22b
Staines Bb	0784 465794	V21/22/22b/23
Starbase One	071-733 3992	V21/22/22b/23
Strange Brew!	081-665 5038	V22/22b
Stun User Network	061-429 9803	V21/22/22b/23
Summer Wine	0484 653234	Hst
Sunburn Inc.	021-449 5269	V21/23
Super Ops Bbs	0782 284081	V21/22/22b
Swindon Newc Bb	0793 616683	V21/23
System-c-v	0403 50607	Hst
T.a.b.b.s.	0533 517615	V21/22/23
Tabbs	0225 743797	V21/22/22b/23
Taecomm	0994 6709	V21/23
Taff'S Retreat	0834 4562	V21/22/22b/23
Tardis	0772 27236	V21
Tasque	0355 222664	Hst
Tasug Opus	0904 760129	V21/22/22b/23
Tavern	081-445 6514	V21/22/22b/23
Tbbs-rovoreed	081-542 9767	V21/22/22b/23
Tequila Sunset	0703 867786	V23v
Terminal Net 5	0402 456135	V21/22/22b/23
Terminal-net	081-423 5262	V21/22/22b/23
Tharr Bbs	0234 261804	V22/22b
Third Wave	071-585 3163	V21/23
Three Kings	0354 56267	V21/22/22b
Track 83	0953 851351	V21/22/22b/23
Transylvania	0274 621668	
Tranz-com Bbs	081-952 6273	V21/23
Trinity I	0392 410210	V21/22/22b/23
Trinity Ii	0367 22764	V21/22/22b/23
Tug Ii	0905 775191	V21/22/22b/23
Twilight Zone	081-788 0884	V21/22/22b/23
Twilight Zone Ii	071-608 1485	Hst
Uk Healthlink	0942 722984	V21/22/22b/23
Unisys Etoi Bbs	081-453 5739	V21/22/22b/23
Unit One	0285 713688	V21/22/22b
V.i.t.a.s.	021-749 5860	V21/23
Valente'S Bbs	071-978 2078	Hst
Vector System	0329 45824	Hst
Viking East Anglia BBS	0255 503048	V23v
Village	081-464 2516	V21/22/22b/23
Village Fayre	081-841 5971	V23
Voyager Bbs	061-725 9580	V21/22/22b/23
White Lightning	0635 37259	V22/22b
Whitehall Pent	071-930 3903	V21/22/22b/23
Wild Imaginings	091-263 4303	V21/22/22b/23
Winchester Remote	0962 69322	V21/22/22b/23
Wolver'ton Ros	0902 745337	V21/22/22b/23
Womble Base	081-979 9606	V23
Woodgreen Bbs	081-889 5624	V21/23
Yugo Bbs	0734 753648	V21/22/22b/23
Zeus Bbs	0487 710487	V21/22

24-HOUR SERVICE
OPEN: MON - FRI 9.00 - 5.30
SATURDAY 10.00 - 2.00

Business Technology Centre

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SEIKOSHA SL92

24 PIN 42K BUFFER 9 FONTS
£299 INCLUDES ON-SITE WARRANTY

DOT MATRIX PRINTERS

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STAR	LC-10 colour	144/36	166
STAR	LC-10 colour comm 64	144/36	166
CITIZEN	120D PLUS	120/25	105
CITIZEN	120D PLUS comm 64	120/25	105
CITIZEN	PRODOT 9	300/60	265
SEIKOSHA	SP2000 (21k buffer)	200/40	199*
SEIKOSHA	MP1350	300/50	359*
PANASONIC	KXP 1180	192/36	139
MAN. TALLY	MT 81	130/26	104
OLIVETTI	DM 100SPR	200/30	119*
EPSON	LX 400	180/30	135
9 PIN 136 COLUMN			
STAR	LC-15	180/45	255
CITIZEN	PRODOT 9 x	300/60	345
PANASONIC	KXP 1592	216/45	255
SEIKOSHA	MP5350	300/50	499*
24 PIN 80 COLUMN			
STAR	LC24-10	170/57	195
CITIZEN	SWIFT 24	192/64	239
CITIZEN	PRODOT 24	200/60	369
PANASONIC	KXP 1124	192/63	219
SEIKOSHA	SL92 (42k buffer)	240/80	299*
24 PIN 136 COLUMN			
STAR	LCX24-15	200/67	325
STAR	XB24-15	240/80	510*

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SWIFT 24 COLOUR

24 PIN PRINTER INC. COLOUR KIT
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PRICES AND SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE.
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Goods are offered for sale subject to our standard terms and conditions of sale - available on request.
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CANON	BJ130 INK JET	519

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OLIVETTI PG306

LASER PRINTER
£899 INCLUDES ON-SITE WARRANTY

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HITACHI	681	A4/A3	PLOTTER	520
HITACHI	674	A4/A1	PLOTTER	2149*
(includes one year on-site warranty)				
PANASONIC	FX-RS505		SCANNER	919
(with I/F card, cables, IMAGE AND OCR software)				
NISCAN	HAND SCANNER			139
NISCAN	OCR software			189

DRIVES

CITIZEN	OSDD 05A-WD 3.5" 720K in 5.25" KIT	59
CITIZEN	OSDA 39C-WD 3.5" 1.44mb in 5.25" KIT	69
CITIZEN	OSD 76A-WD 3.5" 720K AMSTRAD KIT	59
INTERNAL	5.25" 1.2mb	59
INTERNAL	5.25" 360K	69
JAVELIN	HC20 20mb XT HARD CARD	185
JAVELIN	HC30 30mb XT HARD CARD	199
FILECARD	HC40 40mb AT HARD CARD	229
KYOCERA	KC 20B(s) 20mb XT/AT DRIVE, 3.5"	138
KYOCERA	KC 30B(s) 30mb XT/AT DRIVE, 3.5"	158
KYOCERA	FRAME 5.25" kit for 3.5" hard drives	5

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SERIAL CABLE	1.8 metre	10
T SWITCH	2 way serial	18
T SWITCH	2 way parallel	18
T SWITCH	2 way serial crossover	25
T SWITCH	2 way parallel crossover	25
BUFFER	64k in-line	79

ACORN A3000

1Mb RAM KIT
£89

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GAMES WEEK

All that's best in computer entertainment

PREVIEW: SUPER MONACO GP

Under a cloak of secrecy, US Gold has been working on the arcade game everybody said couldn't be converted to the home computer market. *Super Monaco Grand Prix* is now being tweaked, tuned, revved and retreaded in deepest Canterbury, where ace race-supremo Zareh Johannes (known to many simply as ZZKJ) is putting the final touches to the Amiga and ST versions.

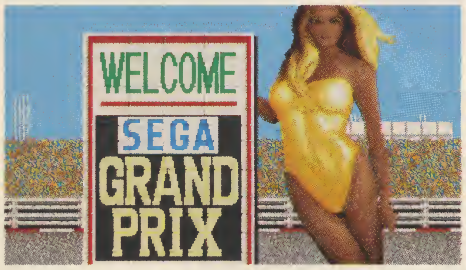
The arcade game, which had such features as a rear-view mirror, rev-counter and several methods of gearchanging, was a major arcade hit, renowned for leaving its drivers in a state of extreme hypertension. How does the home computer version compare?

Games Week checked it out – *Monaco Amiga* looks as good and plays almost as fast as its arcade father. Already complete in the demo version were features like the mirror, hordes of opponents, oodles of roadside sprites, a full panoramic view of Monaco and the world-famous tunnel. A multitude of gearchange options, ranging from fully automatic to a full seven-speed manual system, gives newcomers and old hands the abilitty to be competitive. And competition is what it's all about – with race times and race position all-important if you are to make to the chequered flag.

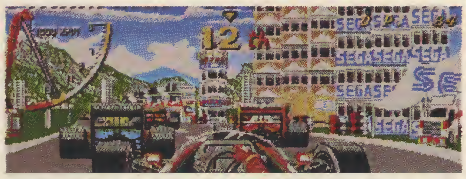
Johannes' previous racing works, *Super HangOn* and *Power Drift*, are developed even further in *Super Monaco GP*. Plenty of improvements are apparent, while keeping the nice touches that made the former successes. Super-accurate mouse control can be used in *Monaco*, complete with the tweaking system that lets you set the sensitivity of your controls.

As well as maintaining the quality of previous programming efforts, Johannes has achieved success on the visual side, too, by insisting that artist Saul Marchese worked on *Monaco*. Marchese previously worked on both *Super HangOn* and *Power Drift* with Johannes, and the two have built up a good rapport, which produces excellent results. Featuring in *Monaco* are hundreds of sprites, backdrops and racing images which are all hand-drawn on the Amiga in 32 colours. Colourful objects, ranging from Monaco's famous trackside hotels to every kind of sponsor's sign you can think of, whizz by at breakneck speed.

Production house Probe Software should be passing the finished software over to publisher US Gold in time for a March release. Final versions will be available for the ST, Amiga, C64, Amstrad and Spectrum. Rumour has it that Ayrton Senna's already reserved his copy so he's got something to occupy his time while the rest of the field limps in behind him!



• Super Monaco GP features the scantily-clad bimbos you expect to see lurking around racetracks, looking demure. There are even a few cars, too!



• The view from the cockpit is stomach-churningly real. At high speeds the F1 racing car performs like a dream, but you can still find yourself spitting out Armco when things go wrong!

TOP 10 SIXTEEN-BIT GAMES

1	2	Teenage Mutant Hero Turtles	Mirrorsoft	ST AG PC
2	1	Powermonger	Electronic Arts	AG
3	3	Robocop 2	Ocean	ST AG PC
4	7	Speed Ball 2	Mirrorsoft	ST AG PC
5	10	Lotus Turbo Challenge	Gremlin	ST AG
6	5	F19 Steath Fighter	MicroProse	ST AG PC
7	4	Toyota Celica Rally	Gremlin	ST AG
8	NE	NARC	Ocean	AG
9	12	Power Pack	Beau Jolly	ST AG PC
10	9	Golden Axe	Virgin	ST AG

For the week ending 22nd December 1990
ST – Atari ST Ag – Commodore Amiga PC – IBM PC or compatible
Chart compiled by Gallup. © European Leisure Software Publishers Association.

PRINCE OF PERSIA

ST, AMIGA & PC • £24.99

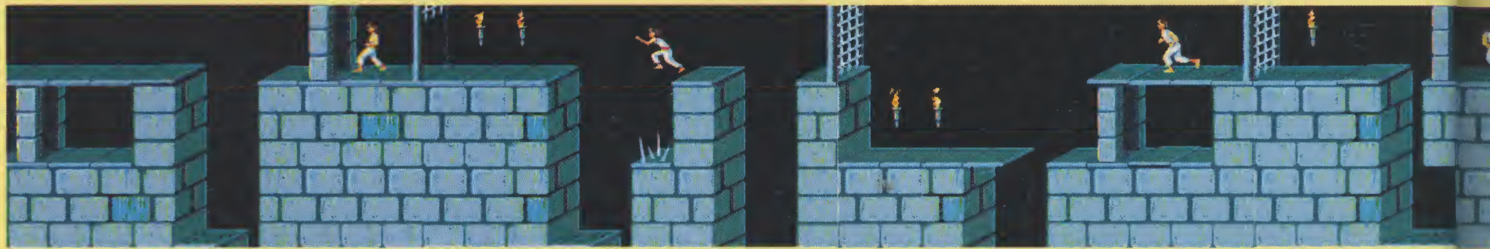
Amazing, action, adventure, athletic,

This week's review takes us to ancient Iran, to take the role of a young adventurer attempting to save a beautiful princess. Broderbund and Domark bring you *Prince of Persia* – GAMES WEEK brings you the lowdown.

The first notable thing about *POP*, is its incredible animation. Your character, though only a couple of inches high, is small, but perfectly formed! He runs, jumps, kneels and lands like an athlete. Apparently, it's because the game's programmer, Jordan Mechner, studied hours of movie-clips in order to make your movements as realistic as possible. His end results are a study in perfection. You can jump and land with bent knees below, or grab a nearby ledge as you're flying through the air. Then, hanging by your fingertips, you swing back and forth, until you drop to the floor or until you climb up. Most of the time, you run around, but you can take small dolly-steps to approach dangers. You have total control over a truly incredible character.

Though you are unlikely to tire of the adventurer's agility, you can't just do gymnastics all day! You've been dumped in a vast dungeon and you've got to get out, quickly! You see, the Sultan has gone off on a crusade and his Grand Vizier, a man called Jaffar, has assumed control. You're the only thing that stood between Jaffar and absolute power – so he decided to throw you into jail. Why? Because the Sultan's daughter fell in love with you, not him, that's why. With you off the scene, he has given her an hour to agree to marry him, or he'll kill you both. You must find your way out of the dungeon, through the palace and up to the top of the tower where the princess is held.

But, as you'd expect, this is no Sunday afternoon jaunt. The first thing you're likely to come across is a guard, who has a special advantage over you. It's called a sword, and you'd be a lot better off if you had one too! There's one that you can claim, if you can find it. It's lying



1 Prepare for the leap of death in your quest for the sword. *2 Chasms contain pits with steel punji stakes at the bottom, so time those jumps carefully or you'll become a kebab.* *3 Find the right pressure switch to open up the portcullis or you're going nowhere fast.* *4 Before you flee, check out the scenery. Somewhere here is a false ceiling and the route to a magic potion.*

Rich playing tips

Treasure Island Dizzy

This week, courtesy of Raymond Wightman of Carnforth, we bring you a complete solution for *Treasure Island Dizzy* (Codemasters). So, dig it out, boot it up and get playing...

Get the snorkel and the weight, put the weight on the hook and then jump up. Find the gravedigger's spade and the pogo stick which is hidden in the clouds and then jump in the water. Go to the island in the sky and collect the fireproof suit which you find there. Jump off the island and grab a coin off the mast of the old ship. Dump the pogo stick, collect the crowbar and then drop it on the trembling rock. You can see bubbles rising here – use these to hitch a ride to the other side. If you drop down a hole here, there's an air pocket where you find another coin.

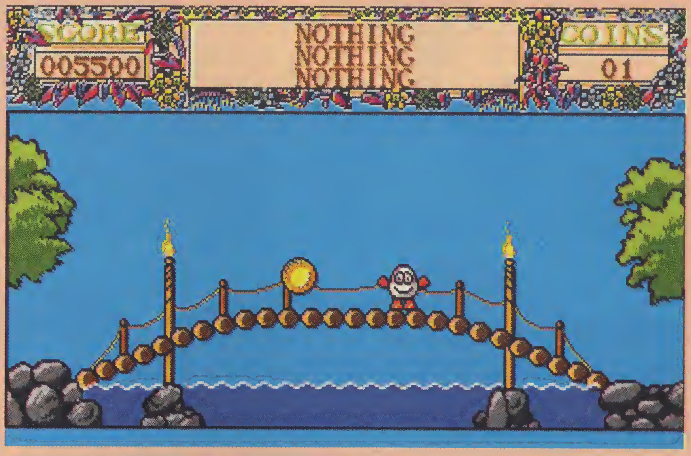
Drop the gravedigger's spade next to the grave and then find the store and the pier. You must first trade in the egg for a boat, but you don't have the egg yet. To get it, enter the smuggler's cave and pass straight through it using your fireproof suit. One of the caves contains the egg, surrounded by rainbow colours. But beware, it's booby-trapped!

Jump on the stone pillar where the egg is resting and stand as close to the far edge as you can. Grab the egg and quickly run down the cave without stopping. Rocks are falling all around and you must not get squashed! Go back through the smuggler's cave and drop the fireproof suit. Remember where it is because you need it again later.

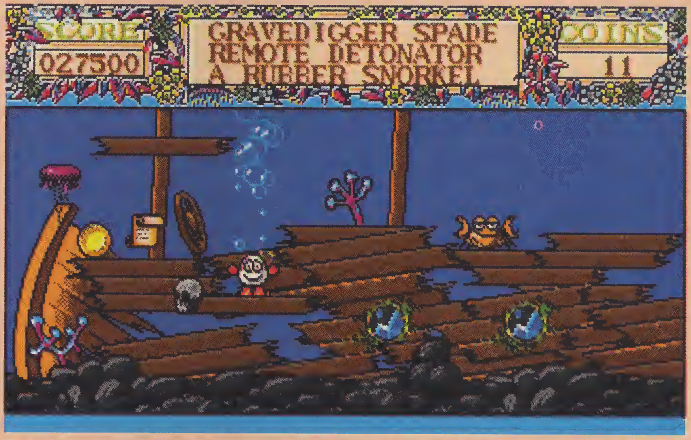
Get the dynamite and follow the fish through the water until it disappears. After getting the boat to the pier, you still need a motor! Wear the snorkel, take the dynamite and swim back to shore. Go through the tree village, picking up the detonator as you pass it, and get to the caves. Place the dynamite next to the blasting area and jump behind a rock, where you drop the detonator. The fallen rock blows away, revealing a bag of gold coins. Trade these in at the store for a motor and then return to the pier. Drop the motor onto the boat and bingo! You're out of gas! Go back to the store and buy some.

Take the axe and the bible to the bridge and drop the axe in the centre. You fall down into more water, but you need to jump out again quickly so you can rearrange your inventory, or you lose the bible. When done, jump into the water and get HookJaw's treasure. Beware again though, because it's cursed!

Jump out of the water and head back to the store. You can leave the bible here if you need space. Trade for the petrol and take it to the pier, where you find you need an ignition key to start the boat (pedantic, or what?). At the pier you may notice a yellow key – take it and go back to the smuggler's cave to pick up your old fireproof suit. Walk along and you find a trapdoor – open it with the key and you find vintage brandy inside. Take this back to the store and trade it in for the ignition key. Then it's back to the boat, jump in and start her up! Er, job done, methinks!!



•Treasure Island Dizzy gets the playing tips treatment this week. Check out the panel for a complete solution.



• Picking up the right stuff is easy – it's getting it all in the right order that makes life really tough!

animation and full of eastern promise!

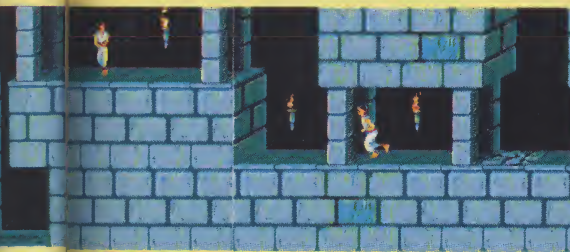
deep within Level One, behind many a trap. In your search you come across floor-slabs which crumble beneath you, fake ceilings, switches and plenty of chasms to leap. Portcullises block your way, providing the puzzles which you're constantly set. Which switch? Where?

And ever-present too, is the threat of death. Deep pits, perhaps with punji stakes at the bottom, are often your killers. Or it may be a straight swordfight with Errol Flynn's stunt double that takes you off. Or maybe the life-giving potion you just drank, er, wasn't. Who knows? There are many ways to die in your quest for the level's exit, let alone the princess.

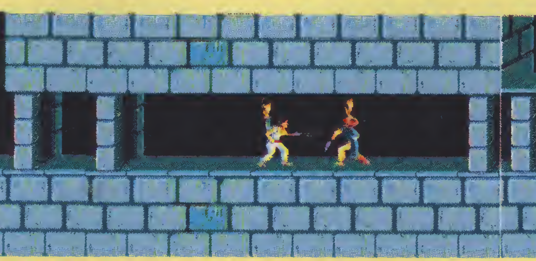
Death doesn't mean disaster though, for POP has a different outlook on the 5-lives philosophy. You have an almost limitless supply of lives – instead you have one hour of game time to complete the game. Every death costs you the last life's time. After Level Two is complete, you can save to disk, but it still may not be enough if you've been dying a lot!

Along with its amazing animation, *POP* delivers a pleasant helping of sounds too. The music has an Islamic air, as you'd expect, full of Middle Eastern half-tones and weird pipes. Some tunes get played during the game, along with sampled sound-effects, while others are reserved for *POP*'s many inter-level tableaus.

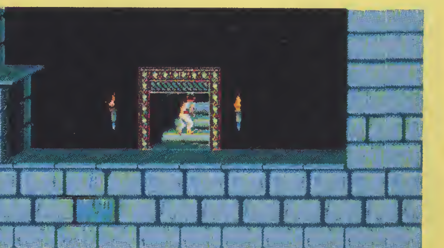
POP has few bad points, which is a rare thing. However, it does have one: each level must be replayed from the start when you die. This creates havoc if you lose confidence and forget earlier techniques. Aside from that, *Prince of Persia* is a joy to play, and a bugger to finish, which makes it a sure-fire hit in anyone's book. Buy it, study it, drool over it, shout at it, bite your knuckles and wince at it, but most of all finish it. It's just too good to miss.



5 Having dropped into here, there are two ways to go. One way leads to the sword, the other to certain death if you're unarmed.



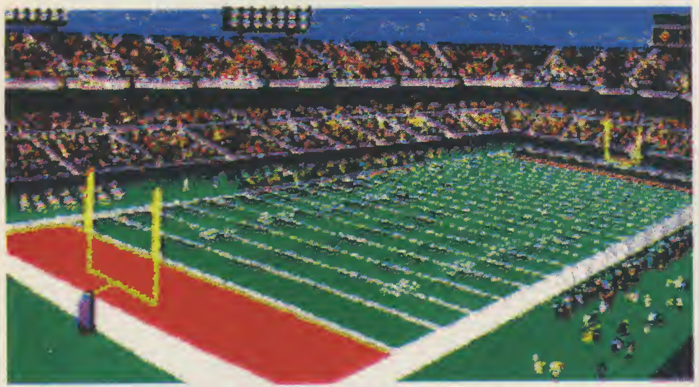
6 Buckle your swash and parry those blows. Three strikes and you're a dead duck.



7 The exit! But first you must open it using the nearby pressure pad, if you can find it!

CONSOLE ZONE

Probably the greatest American football sim ever and a cult US game are just two of the items to come under the scrutiny of Richard Frederick this week.



• **John Madden American Football:** *every player has his own personality.*

SEGA MEGADRIVE

John Madden American Football from Electronic Arts is the best ever simulation of this spry sport.

Seventeen teams must blitz and scramble their way to Super Sunday. Each one is packed with pro calibre players who you make dive, spin, jump, block and break tackles. Players contend with different weather conditions such as rain, mud, ice, wind and snow. You can call more than 100 plays, even audibles.

Every player has individual attributes. Some have better hands, others are faster while some guys can't hold a block on grass. You see the games played-out in glorious 3D with life-like animation and hear digitised speech, grunts and groans.

John Madden American Football costs £39.99 and includes an excellent manual. Bet you can't wait for that first end-zone touchdown dance!

NEC PC ENGINE

First there was *Bubble Bubble*, then came *Rainbow Islands*, and now *Parasol Stars* has landed in Japan.

Bubble Bobble III features the same sense of style and fun found in its predecessors. The game could prove to be yet another popular arcade platform puzzle title for Taito, skillful creator of all three games *Parasol Stars* costs ¥6600 (£26).

Taito has also released *Special Criminal Investigation* (*Chase HQ II*) for ¥7200 (£28). This game should appeal to frustrated fans of Miami Vice... speed down the freeway in an expensive Italian sports car, shoot a few crooks and collect extra weapons parachuted in by helicopter. It's just an average day for your video game cop.

SEGA MASTER SYSTEM

Are you jealous of everybody going on about how good Nintendo *Tetris* is? Fear not. *Columns*, a new arcade block puzzler, is very much inspired by the aforementioned Russian game. Only this time the fun is in full colour!

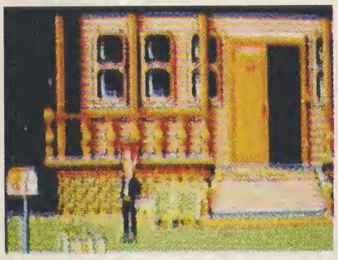
Columns costs £24.99 and is also available for the Sega Megadrive and Nintendo GameGear.

ATARI LYNX

You're a bored warship commander whiling your days away working for the local newspaper when an advert catches your eye. The Zarlors need experienced warship pilots to help them defend their planets against unprovoked invasion from the Melogites. The ad promises excitement, glory and some dosh.

Zalor Mercenary is a full-player shoot-'em-up costing £34.99. During the game you buy and sell weapons to give yourself a greater chance of survival.

NINTENDO ES



• ***Manic Mansion** has become so popular in the US that it has spawned a television program .*

Beware! Once you enter *Maniac Mansion* you may never come out.

Why is there a chainsaw in the kitchen? And a scalpel-wielding doctor with an attitude? And a cheerleader held captive in the basement? And a hamster in the microwave? And why is Nurse Edna so damn ugly?

Jaleco has converted this wacky arcade adventure originally created by Lucasfilm Games. Your goal is to rescue the cheerleader and keep the mad doctor from taking over the world. There are over 50 rooms to search for clues, a cast of dangerous characters to avoid and five completely different endings.You pick three of seven teenagers to go inside and solve the mystery. Who you pick determines the course of the game.

This off-beat mystery has even been turned into a television show on The Family Channel in America. If you live in the States you can get the official *Maniac Mansion* hint book by calling 1-800-STARWARS!

NINTENDO GAMEBOY

The attack is on! Natsume is asking you to join Pendrich, the Prince of Penguins as he battles the enchanted armies of the wizard Borbon the Great.

This evil magician has sent scores of animated erasers, metal clips, crayons and pencils to block the passageways of the Penguin realm. You attack with mighty kicks that blast your enemies across the screen. You reverse their direction by bursting the power seals. Once you've cleared all the panels you progress to a higher level.

Amazing Penguin is packed with 40 levels and a password facility to return you to your last completed zone. ■

PLAYING TIPS

ATARI LYNX
Here are the door codes to *Electrocop* level 1:
1: 2473 – Exit to Level 2
2: 9874 – Exit to Level 2
3: 8743 – Weapons

SEGA MEGADRIVE
Enter the 400th *Populous* world with this password: BADMEILL

NINTENDO GAMEBOY
Thanks to Alan Colson from Birmingham for this handy *Super Mario Land* hint. Before entering any treasure room, collect all of the goodies. When you exit they will have all reappeared!

NEC PC ENGINE
Play the Champion Tennis King in *World Court Tennis* with this passcode: MNRKNHAAFFFFnPW

NINTENDO ENTERTAINMENT SYSTEM
Be invincible and start at the beginning of the Overworld Fortress in *Kid Icarus* with this passcode: ICARUS FIGHTS MEDUSA ANGELS

SEGA MASTER SYSTEM
To play a higher *Wonderboy* round on the title screen press this sequence: [Button I], [Button I], [Button I], [Button II], [Button II]. Then, simultaneously hold down [Up], [Button I] and [Button II]

THE TRADING ZONE

Confused by the huge range of video games out there? Ever bought a turkey? Don't worry! Let the Zone lead you through the greatest games available. This week we reveal the Megadrive monsters...

1) *Strider.* Immaculate conversion of the lively Capcom coin-op packing 8Mb of silicon and frantic platform action. Set in a near-future Russia populated by mutant centipedes, dinosaurs, Amazon women and mad wolves. Pixel perfect, it's hard to tell the difference between this conversion and the original arcade game!

2) *John Madden American Football.* If you love american football, you've got to buy this cart! Check these stats out... 17 teams, over 100 different plays, all-pro moves (dives, spins, jumps, blocks, break tackles and an end-zone touchdown dance), various weather conditions (rain, ice, snow, wind), realistic three-dimensional visuals and sampled spot FX.

3) *Golden Axe.* Another classy coin-op conversion from the land of the rising property price . Hack'n'slash your way through monstrous horizontally-scrolling landscapes filled with fierce fantasy folk. You have the choice of playing a dwarf, barbarian or amazon. Don't think, just wisely wield your weapon. Includes two more levels than the arcade game.

4) *Populous.* Ever wanted to play God? Well, here's your chance! Lead your followers, build settlements, unleash natural disasters , create an army, defeat evil. Innovative in every sense of the word.

5) *Thunderforce III.* We're still waiting for the definitive Megadrive shoot-'em-up, but in the meantime try this construct for size. Surge through scrolling lava flows and the thrust of massive rock caves, avoid losing control amid perilous bubbles in murky depths, encounter challenges in the realms of a deeper dimension, then kick ass.

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NEW! - AMIGA PACK

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ESCAPE ROBOT MONSTERS
TENGEN
RAINBOW ISLANDS
ocean

A500 BATMAN PACK

Commodore AMIGA 500
BATMAN PACK

The Commodore A500 Batman Pack must surely rank as one of the most popular computer packs ever! The pack features the **Commodore Amiga 500 computer** with **mouse controller** and **TV modulator**, plus four top software titles. The software includes: **'Batman The Movie'** - Rid Gotham City of the cunning joker, in Ocean's top selling title based on the blockbuster Batman film; **New Zealand Story** - high quality conversion of the leading arcade game; **Interceptor** - Dogfight with two F-16's in this leading flight simulator; **Deluxe Paint II** - top quality Amiga graphics package which set the standard for others to follow. Return the coupon for further details.

PACK INCLUDES:

A500 Computer & Mouse	£399.99
A520 TV Modulator	£24.99
Batman The Movie	£24.95
New Zealand Story	£24.95
Interceptor	£24.95
Deluxe Paint II	£49.95
TOTAL RRP:	£549.78
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PACK PRICE:	**£399.00**

£399 INC VAT

AMIGA 2000

For the more serious or professional applications user, Commodore have a selection of systems based around the expandable Amiga 2000, at prices from £1295+VAT. The A2000 features a full 1Mb RAM (expandable to 9Mb), 9 system expansion slots, plus IBM compatibility with the use of PC-XT or PC-AT bridgeboards. Complete and return the coupon, putting a tick in the A2000 box, for details of A2000 computer systems.

£1295 +VAT= £1489.25

FLIGHT OF FANTASY

Flight of Fantasy is the very latest Amiga 500 pack from Commodore, featuring BRAND NEW software releases, to make this the most spectacular A500 pack ever! The pack features the Amiga 500 computer with mouse controller and TV modulator, as well as four top software titles. These include the following:

DELUXE PAINT II:

The high quality graphics program that set the standard for other Amiga art packages. Deluxe Paint II includes powerful, easy to use tools that bring out the artist in you. Create masterpieces, presentations, 3D perspectives or just doodle.

ESCAPE / ROBOT MONSTERS:

Here's something completely different - a science fiction story with comic book style graphics. Our heroes Jake and Duke are on the Planet X rescuing Humans who have been captured by the Robot Monsters and forced to create an evil Robot Army to DESTROY EARTH! Jake and Duke fight their way through hordes of evil Robots to help the Humans escape.

RAINBOW ISLANDS:

Slip on your magic shoes, practise throwing a rainbow and you're ready to go island hopping. From the Island of Doh to Monster Island, you will encounter Doh himself, stinging insects, lethal combat machines, mechanical assailants, the formidable beings of legend and folklore. Finally enter the world of darkness and its inhabitants.

F29 RETALIATOR:

The ultimate in flight simulation with a choice of two aircraft and four battle environments with dozens of different tactical missions. Aerial combat, strategic bombings, interactive ground based battles, seagoing carriers ... the list of features is endless. Real time cockpit displays, including 'true radar' enhance the realistic feel of this stunning simulation.

PACK INCLUDES:

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PROTECT AND

Safeguarding software from pirates takes more than just the copyright act. Huw Passmore points you in the right direction for safe software.

If you're just starting out 1991 with a firm intention to make it the year you're going to bring to market your own commerical programs, somewhere along the line you're going to have to consider protecting that software. After all, any enterprise of this nature will have cost you long hours of investment, both in time and money, so it's important to look at what safeguards the law offers you and what additional protection you need to incorporate into your software.

INFRINGEMENT

Let's begin by looking at the kinds of infringement you need to protect yourself against. Fortunately, The Copyrights, Design and Patents Act, brought into force in August 1989, is there to help you in that it is quite clear as to what constitutes infringement of copyright in a program. Its main provisions state that the making of transient copies and storage in a computer if not authorised by the copyright owner will infringe copyright. It needn't just be the actual underlying code either; database or spreadsheet data stored within a machine for subsequent manipulation is also protected as copyright works. This doesn't stop at mere disk swapping either; transmission over a local or wide area network and re-compiling or similarly re-interpreting a program also come under its legislation.

Perhaps most useful of all is the protection against passing information as to how physical copy protection has been achieved; like disseminating passwords or key wheel lists and the like.

Perhaps it's a myth, though, to think in terms of protecting software through the use of technical means. As anyone in the leisure software industry will tell you, encryption locks, passwords, key wheels and other ingenious devices only encourage the determined copier. The casual user may be deterred, but the professional cracker will rise to the challenge. Ironically, these very methods can serve to deter the buyer from purchasing your program in any case since the software is generally more difficult to use or more hassle to get up and running quickly. You might be alright if your software is quite complex, say you've written some specialised application, then the user may need continual support and maintenance. You can retain source code, diagnostic tools or program documentation to frustrate the copier. However for cheaper and widely distributed programs, designed for general use and therefore as a consequence much easier to use, one is really forced to resort to legal means of protecting your work.

Contract and copyright are the two key terms here but before moving onto them it is perhaps best to dispense with the notion of patent that one would normally ascribe to design protection.

Computer programs were excluded from the 1977 Patents Act as being to unspecific in nature. Patenting rests on the notion of novelty or originality; and applying for a patent is a most rigorous procedure as it requires stringent definitions of uniqueness. However, recent developments in European patents law, which should shortly be drafted into law here, may offer some limited scope for patenting software. However, the areas seeming most favoured are those to do with industrial processes rather than commercial programs.

PROTECT YOURSELF

Also at this point, we can quickly pass over three other indirect means of protection. Criminal Law suffices for packaged software, where copiers seeking to pass on pirated software can be prosecuted under both the Theft and Trade Description acts. Also of note is the notion of a trade mark to protect the name under which the software is sold. Here you must use distinctive names and retain copies of advertising and promotional material along with dates and areas of circulation. However, perhaps the best of these three indirect methods of protection is the area of literary copyright or copyright other than in the program iteself. Here, a program's underlying specifications, its keystroke sequences, menu operations, screen displays and keyboard templates can all be protected under literary or artistic copyright. Obviously the type of protection being sought through the use of this latter measure is that of 'look and feel'. In other words, one can claim copyright in the functionality of a program and protect oneself against a third party effectively emulating the nature and function of your software completely, even though that party may not have copied your original source code.

CONTRACT & COPYRIGHT

However, to return to the two most effective avenues of protection, contract and copyright. Contract is most often achieved through the 'shrink wrap' licence one enters into on opening a software package. On many business programs, the sealed envelope containing the diskettes contains a contract one is deemed to have entered into on breaking the seal. This sets out to clearly define the terms under which the licenser expects the licensee or user to respect in using the software including the very important exclusion clauses restricting the users rights with regard to freely distributing and/or copying the disks to unlicensed individuals.

Clauses relating to site licences will thus, for instance, be outlined which establish the basis for further payment. While in strict terms, a lawyer would cast doubt on the efficacy of the shrink wrap approach, arguing that such contracts are only tenable in law if both parties

PRACTICAL STEPS

1) Copyright notices should name the owner of the copyright, the place and date of publication. Also use the © to establish protection under both UK and US law and use the phrase 'All rights reserved' to establish copyright in Latin America. A sentence such as 'You may only make a single copy of this program for backup purposes or copy it onto a hard disk and keep the original solely for backup purposes' will suffice in establishing copyright in packaged software. All notices should reside not only on the packaging, but also on the program disks, start up screen display and in the program code.

2) To further protect your rights with regard to counterfeiting it is advisable to introduce certain portions of code within the program that have no functionality but which merely serve as 'sleepers'; identifiable code which only you could have entered. Also, along the same lines, you can add serial numbers into the actual program code.

3) Make sure that when you're writing the software or demonstrating its viability to potential publishers that you only show it to others under obligation of strictest confidence. A non-disclosure agreement is essential as many a programmer has been ripped off by unscrupulous third parties.

If you intend to send away program evaluation disks to publishers make sure you employ all the technical means at your disposal to prevent raw code from being accessed. Perhaps the purchase of suitable encryption software might be advisable here.

D SURVIVE

sign a written agreement, unless your intended software is very expensive this advice is unlikely to be practicable. What the shrink wrap contract should establish is that the author retains all intellectual property rights in the software, in the source code, object code and associated documentation. Furthermore, it should be made clear that the buyer has only a non-transferable licence to the software and can under no circumstances grant any other party use of it. So, you can determine that a user or company can only use the software on certain machines, networks or CPUs, and only for his or its own internal purposes. To substantiate the agreement even more, you can specify that only a certain number of backup copies can be made and even specifiy that the contract will only run for a certain period of time.

However, the shrink wrap approach does have its limitations. You will need to obtain a written agreement to be absolutely sure of suing a buyer in the event of that person or company allowing a third party to copy your software.

But perhaps the main disadvantage of relying on contract is that it is no use against counterfeits; in other words it will not protect you against infringements by third parties with whom you have no contractual realtionship. This is where the law of copyright comes into play. Copyright is automatically invested in your software as soon as it is written. The key aspect of copyright with regard to programs is that if the work is computer generated then copyright is owned by the person who makes arrangements for the generation of the work. Moreover, copyright law doesn't just come to the fore in cases where exact copies of software have been made; it can be brought to bear against software that has been 'substantially copied' in terms of its quality. Once you have established copyright and established that a third party has had the opportunity to infringe that copyright it is up to the alleged infringer to prove that copying never took place.

However, the major drawback with copyright law is that it only protects the expression or the form in which an idea is expressed. Thus the words in this article you are reading are the copyright of the publishers, but the ideas they contain are not. As such, there is nothing to stop you rewriting this content in another form and selling it to another publisher! However, in this instance, you may one dark night come across the copyright law variant known as 'the broken legs approach'.

In copyright then, only copying is protected against, not independent design so the waters become rather muddied when we enter into areas like 'interfaces' and 'reverse engineering' where a third party attempts to use the underlying principles forming your work to incorporate those features into their own competing programs.

To make sure you maximise your copyrights, it is best to use copyright notices, to keep and date all original drawings, plans, sketches, flow diagrams, listings and specifications and print out all source code and date it. It's also a good idea to retain all work that was discarded in production of the program so that you can indicate the amount of work you put into the project. These measures will establish subsistence of copyright but to further establish ownership of copyright it is necessary to note details of all people involved in the enterprise and their exact function and role in the project along with contracts. Remember that any business enterprise involving friends is best based on a legal precedent even if that is something as simple as a joint partnership. ■

WHAT TO DO IF YOU'VE BEEN PIRATED

What you need to do is act as quickly as possible. Get legal advice immediately to ascertain the strength of your exact legal position. Perhaps better still, get in touch with FAST (telephone: 0628 660377) as they will not only be able to tell you the best way to proceed but will also put you in touch with solicitors who are familiar with software copyright law.

At this point you will begin to know what evidence you should bring to bear in a prosecution, but it is important not to let the copyright infringer know that you are about to commence legal proceedings against him. Valuable evidence can be altered or destroyed in the meantime. Various tenets of both civil and criminal law allow for search warrants to be issued in such cases, but not before you have applied, via a solicitor, for an interlocutory injunction against your infringer. This is simply an intermediate hearing pending a full trial which can circumvent the lengthy losses due as result of delays in the legal system.

The important thing to remember, though, is to protect yourself against infringements from the beginning, not just from the first line of code but from the original sketches of ideas.

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ST WORD PROCESSING

MAKING THE MOST

You own an ST so forget about paper – pick up one of the many ST word processors and exercise your literary talents. Mark Higham shows you how.

After games, word processing is the most common application for your ST. In the early days of the machine, Atari bundled *First Word* with it. This can now be found in the public domain and if your only demands on a word processor are for the occasional letter, you can't find a package more easy to use.

In the years which followed, *First Word Plus* appeared, supporting spell-checking features and even the ability to import pictures into a document. In the battle to come up with original features word processors have become increasingly sophisticated to the point that they have often smudged the border between desktop publishing and word processing. For example, Signa's Script offers you the chance to output text in a variety of fonts and Microsoft *Word* even provides limited support for multi-column text.

Since the ST uses drop-down menus and mouse pointers, word processors tend to support a GEM environment where windows and menus are used to help you through the pages and mouse clicks can be used to select blocks of text. While in most applications, this is a good thing, it can actually make word processors very frustrating because it slows down your typing speed if you need to take your hand away from the keyboard to move and click the mouse. For this reason, many word processors (though not all) enable you to use keystroke shortcuts to perform menu operations. For example, to delete a line you may use Control Delete, or Alternate I to switch on italic text.

Another feature found in word processors is WYSIWYG (What You See Is What You Get). This simply means that the display on screen is a close approximation of the final output obtained from the printer.

All wordprocessors have a core of functions to underline text, set margins, mark and manipulate a block of text. There are subtle differences in the way each program does these things, but you can get used to most variations. What follows is a list of 'value-added' features; very few word processors will have them all, but you can decide which ones are the most important to you.

SPELLING CHECKER. The obvious add-on for a word processor. Usually you just choose a 'Spell' menu option and you're off. Cheaper WPs make you save the document, exit from the WP and run a separate spelling checker program. Some programs even offer a 'Continuous checking' option where every word is checked as you type it.

MAIL MERGER. These are the things that generate those classic mail order offers. You make up a standard letter in the word processor, leaving blanks where the person-specific data is to be inserted. By giving each item of data a name like "surname" or "amount_owed" you can read this data from another file and run off hundreds of form letters. The data itself can either be typed into a separate document using the word processor, or imported from a database.

THESAURUS. As the name suggests, this is a version of *Roget's Thesaurus* with hundreds of thousands of alternatives for words. Have hours of fun looking up synonyms of bodily functions. As with a spelling checker, the sheer size of the dictionary often demands two drives or lots of RAM. Using a spelling checker and a thesaurus is usually impractical – two to four megabytes of memory might do it.

TEXT JUSTIFICATION. An important area this, and sadly one that almost every WP reviewed failed on. When you ask for justified text what should happen is that every space on the line is expanded equally. This is called 'microjustification'. Since this means having fractional spaces, most WPs cop out and put in whole spaces in some places and forget about others altogether, making the word spacing in a line uneven. For reference, the lines in this magazine are properly microjustified.

GRAPHICS IMPORT. It can be handy to to include pictures in your documents. An obvious use is to put graphs into business reports, but a more subtle application is to import headlines prepared in a fancy font with an art package. Pictures must first be saved as IMG format, then you create a picture window and load the IMG file into it.

First Word Plus comes a screenshot utility which enables you to convert Degas *Elite* pictures into IMG format.

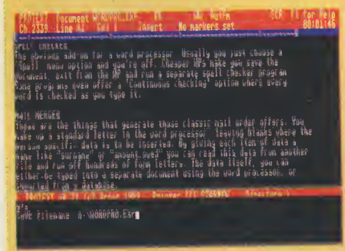
AUTOSAVE. Some WPs can be told to save your document every 10 minutes or so, minimising the risk of lost text should the worst happen. This can be handy if your power supply is prone to spikes or other irregularities,

MULTI-COLUMN TEXT. Being able to run text in two or three columns like magazines and books can be ideal if you're preparing newsletters, but very few word processors offer it. If you're crying out for multi-column text you should be looking at desktop publishing packages.

FOOTNOTES. Footnotes are a nice frill, particularly if you're an academic writing earnest treatises for earnest journals. They offer the ability to add superscripted numbers to the body of the text. The relevant note is assigned to the number and then printed out at the foot of the page. ■

Mark Higham is editor of ST Format *magazine. These articles are reprinted from his book,* Get the most out of your ST, *available from Future Publishing Ltd, The Old Barn, Somerton TA11 7BR. Price £9.95.*

THE BEST BUYS IN ST WORD PROCESSING



• Protext's distinctive split-screen display from command mode. The bottom line shows that the file is about to be saved.

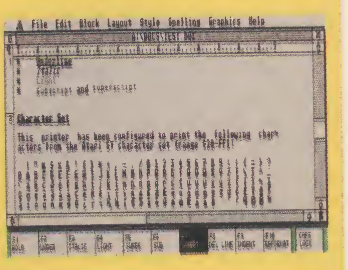
PROTEXT
£149.95 • Arnor Ltd., 611 Lincoln Road,
Peterborough PE1 3HA (0733 68909)

Protext started life on the Amstrad CPC and progressed across a number of machines before a much-improved version finally made it onto the ST two years ago. *Protext* is constantly undergoing new rewrites. The beauty of *Protext* is its exhaustive range of features and the way it can be especially configured to suit your specific needs. *Protext* doesn't offer any fancy screen fonts but concentrates instead on fast text entry and editing. Where the program is particularly good is in providing every editing control you could reasonably ask for. You can move the cursor around your document in steps of character, word, line, paragraph, screen, page and document. You can even transpose adjacent characters, change words into capitals or lower case, delete to the start or end of a line as well as deleting and undeleting whole lines or blocks at a time.

Besides a spelling dictionary and exhaustive mail merging commands, *Protext* also enables you to create Macro documents, assigned to a keystroke command. Nearly 80 stored commands can be added into a document to set a variety of functions. *Protext* is an exceptionally complex database which means you'll either love it or hate it. Anyone who's looking for a truly professional package can't go wrong with *Protext.*

FIRST WORD PLUS
£79.95 • Electric Distribution • GST

This was the first professional word processor to hit the ST and for many, it's still the best. It's one of very few word processors which can read graphics pictures into a document. *First Word Plus* comes with a spelling dictionary and mail merger. However, the package falls short of being a classic word processor because of several little niggles: the first and biggest of these is that the menus have few keystroke shortcuts. Another frustration is that you can't print the file currently in memory. Instead, you have to save it to disk and then print it out from there. *First Word Plus* has all the basic features found in the other word processors. If you want to be able to import graphics into a document, there's no better word processor on the market.



*• **First Word Plus** was the first professional ST word processor and it's still one of the best. Unrivalled spelling-checking options and the ability to import graphics into a document have helped to keep it selling.*

THE ATARI ABC

Now, there's a PC-AT compatible that not only solves problems like other AT compatibles, it also solves the one problem that its predecessors have created ... affordability.

Silica Systems are pleased to present the new Atari ABC. The ABC is a 286 AT compatible that runs at over 5 times the performance of the IBM XT. This is achieved by combining the power and speed of a 16-bit 286 processor, with Atari Corp's development experience and engineering capabilities, which use the very latest in design technology. However, the Atari ABC's are available at 'XT prices' and many XT owners will wonder why they paid more, but got less!

The ABC is a reliable, high performance computer, built to exceptionally rigorous standards. It is well designed, to a state of the art specification, maintaining maximum expansion capability for the future. This includes up to 4Mb of RAM and 3 AT expansion slots. Plus, unusually for a PC at this price, the ABC has the ability to install two or three extra drives, with the cabling already inside the CPU.

The ABC has a host of impressive features, all built-in as standard, encouraging simple installation and ease of use. In addition, the ABC's small footprint and quiet operating, mean that you will notice it less on your desk than other PC's. Except, of course, when you begin to take advantage of its AT power.

At its remarkably low price point, the ABC is ideally suited for home, office and educational use and will take full advantage of the vast range of PC compatible software. And, with 12 months FREE on-site maintenance (8 hour response), you can rest assured that your ABC will be fully supported.

The ABC is the latest addition to a comprehensive range of both 286 (8Mhz or 12Mhz) and 386 (16Mhz and 20Mhz) PC's, from the Business Systems Division of Atari Corp. Atari's PC range offers an unsurpassed combination of reliability, compatibility and expandability, with unique features like Atari's 44Mb removable hard disk on their PC4. Return the coupon NOW for further details of the complete range of PC products from Atari's Business Systems Division.

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■ HELP! Blurry sausages

Keith me old sausage, you've gotta help me, I've recently acquired a second-hand Philips CM8833 stereo monitor for my 1.2 Amiga 500. Before I bought the monitor I did notice that the display was slightly blurred, but as my TV had recently died and therefore I was Amiga-less (not good for you!) and the asking price was only thirty sheets I thought, what the hell!!

Anyway, is there anything I, or someone more qualified, can do to get the thing to focus properly? I'd be mega grateful for any useful advice you could fling in my direction. Many thanks.

Alan Williams, Redcar, Cleveland.

Take the monitor (and the computer to drive it) to a reputable computer or TV fettler. The focus is generally an adjustment that can be made inside. It isn't something that I'd advise you to attempt as it has to be adjusted with the monitor on and there are enough volts and amps round the back of the tube to kill you.

Leave this one to the experts.

■ HELP! Video

The Amiga that I got for Christmas is a great computer and even if games are up to £30+ each, the sound and even the picture through the modulator make them worth the dosh.

I've been considering a word processor, DTP program and database. Friends with serious software have shown me *Kind Words, Pagesetter, Protext 4*, (Is 5 worth the extra £50?) *Superbase*, etc.

What I need is a way of tidying up the display. I have a modulator to the TV, but there's a plug at the back of the TV called SCART. The engineer reckons that if I can connect the computer to the SCART, I'll get a better picture. Is there a lead that I can get that will do that? If the picture still isn't good enough, will I have wasted several quid on the lead?

Mike Hunt, Maidenhead, Berks

The extra cash for the latest version of *Protext* is money well spent. *Protext 5* has everything that you could wish for and some more beside. However, If you have a bare A500, don't bother. *Protext 5* needs a 1Mb machine before it will run.

The lead that you require is a normal accessory that any good computer shop should supply. If you have any difficulty try ringing RSD connections on 0992 584205 or Simpson Electronics on 0332 760353. If the display on the TV still isn't good enough for serious work, choose a monitor with a SCART input and you won't have wasted your cash.

The monitor that Commodore badges as its own is in fact a Philips monitor and is available in many manifestations, one which has a SCART connector.

■ COMPLAINT! Hard disks

re.HARD DISKS MADE EASY (*Express* 108) – WHAT'S IN A HARD DISK DRIVE, I would like to point out one or two "errors":

1) The hard disks are not ceramic but magnetic coated aluminium.

2) The disks spin at 3,600 RPM+-1% (floppies spin at 360RPM+-5%).

3) The heads do not "move around the surface" instead they "fly" above the surface at about 8 to 18 microns.

The idea that "hard disks are notoriously fragile" is not quite true. How else would manufacturers be able to send them all over the world??

Most modern drives can withstand a shock of up to 40Gs (40 times the force of gravity) when the drive is not spinning and the heads are 'parked'.

With reference to your hard disk drive dying "after being driven five miles to the photographers and back" (was this the one in the picture on the same page?). If so, was the photograph taken in a class 100 - or better still, a class 10, clean room? I think not.

All hard disk drives are sealed to prevent contamination from dust that is naturally in the atmosphere, and the lid should NEVER be removed unless it is in a class 100 or better a clean room where 99.99% of airborne particles of greater than 0.5 microns have been filtered out.

I hope this information has been of some help and interest to you. I still enjoy your magazine (despite the mistakes)

If you would like to have your drive repaired then I would recommend Kode Computers Ltd. who will send you a price list. Telephone Swindon (0793-511345).

D.A. Morris, Walcot, Bath

I'm sure that you've taken a lot of time and effort on the above letter and that the comments in it are relevant.

You miss the point, though, that the article was supposed to be a general overview and as such wasn't supposed to go down to the size of a micron in detail. I took the author to task and he referred me to a particular brand of hard disk with a magnetically impregnated ceramic coated disk.

He also pointed out that none of our collection of hard drives had heads that qualified for a certificate of airworthiness. He maintains that no matter what modifications he does to the internals of his disk, he can't persuade any part to fly.

I suppose I should ban you both to a sterile room with rubber walls and let you slog it out between you. The only problem with nit-picking is that it puts your own comments under a 10x magnifier.

■ HELP! 1500 questions

After reading your article on the proposed upgrade from an Amiga A1500 I have several questions to ask you:

1) When will the upgrade become available?

2) What is the cost involved?

3) Is existing software for the A500 (i.e. Graphics and Games) compatible with the A1500?

R. Naibitt, South Hetton, Durham.

1) Not sure, the powers that be at Commodore are retaining their traditional tight lipped stance on this one.

2) See 1)

3) Assuming that the 1500 doesn't do anything radically different, it should run all A500 software. A call to Commodore's PR chap, Andrew Ball, confirmed that it is claiming full compatibility. Watch this space for more. The aforementioned A Ball esquire has promised an A1500 to Tech Tips for a full dose of test driving. ■

■ HELP! A3000 disk driver

I bought a second-hand A3000 (yes such a thing does exist) for the princely sum of £250. This was a bloody bargain, but it took away all of my loose money. I have several disk drives lying around and I'd like to connect one or more to the arch. what I need to know is the pin connections for the Arch. Also, there's a serial port implemented in my A3000 so what are the pins for that too.

Michael Henry, Belfast NI.

If you're the sort of person who's not afraid of meddling with your A3000 and you know what you're doing it may well be worth your while saving up for a Technical Manual.

Any Acorn dealer can get you the A3000 technical reference and it has all the details that you require. To keep you going while you save up, here are the pinouts:

Disk Drive

Odd numbers are return, even numbers are signal

1/2	Disc change
3/4	In Use
5/6	Drive select 3
7/8	Index
9/10	Drive Select 0
11/12	Drive select 1
13/14	Drive Select 2
15/16	Motor On
17/18	Direction
19/20	Step/Dsc chg rst
21/22	Write Data
23/24	Write Gate
25/26	Track 0
27/28	Write Protect
29/30	Read Data
31/32	Side 1 Select
33/34	Ready

Serial Port Pinouts

1	DCD
2	RXD
3	TXD
4	DTR
5	0V
6	OSR
7	RTS
8	CTS
9	RI

■ HELP! PC Laryngitis

The family PC has done sterling service for over two years. A neighbour recently bought an Amiga and we realised that the PC was lacking in sound. our squeaky-beeps couldn't hold a candle to four channel stereo sound. Looking through back issues of *Express* we chanced upon the Ad Lib sound card for the PC. I have installed it in the machine, connected it to a hi-fi and the juke box of tunes that comes with it has delighted family and friends.

When we run games and other programs with sound though, all we get is the squeak. Have I done something wrong.? is there a definitive list of software that will drive the Ad-Lib or can any program be configured to make it work? If anyone produces a list of programs that are kmown to work with the Ad-Lib, I'd be grateful if you'd print it.
Faye Willey, Farnborough, Hants

If the Juke Box is working OK then you've done a fine job of installation. The problem as you suspect is software compatibility. Most programs that support the Ad-Lib card have a menu option on installation to select the Ad Lib drivers. Either that or they automatically work out if the card's there and auto-select the Ad-Lib driver. Old software probably won't drive the card but a lot of current games can benefit from the on board synth sounds of the card. I checked the *Express* files and found this list of programs that we know will drive the beast.

- Accolade
  - Altered Destiny
  - The cyles: International Grand
  - Prix Racing
  - Day of the Viper
  - Don't Go Alone
  - Hardball II
  - Jack Nicklaus Major
  - Championship Courses of 1990
  - Jack Nicklaus' Unlimited Golf
  - and Course Design
  - Les Maley In: Search for
  - The King
  - Star Control
  - Stratego
  - Strike Aces: Bombing
  - Competition Activision
  - Death Track
  - F-14 Tomcat
  - Ghostbusters II
  - the Manhole MS-DOS
  - Mech Warrior
  - Power Drift
  - Tongue of the FatMan
- Broderbund
  - Prince of Persia
  - Where in Time is Carmen
  - Sangiego
  - Where in the U.S.A. is Carmen
  - Sandiego
  - Where in the world is Carmen
  - Sandiego
  - Wolfpack
- California Dreams
  - Tunnels of Armageddon
- CapStone
  - Bill & Ted's Excellent
  - Adventure
  - Cardinal of the Kremlin
  - FutureSport
  - Miami Vice
- Cinemaware
  - Dragon Lord
  - It came from the Desert
  - Loras of the Rising Sun
  - Tusports: Basketball
- Data East
  - Bo Jackson Baseball
  - Drakkhen
  - The Dream Team
- Dynamix (Sierra)
  - A-10 Tank Killer
  - David Wolf: Secret Agent
  - Heart of China
  - Red Baron
  - Rise of the Dragon
  - Stellar 7
- Electronic Arts
  - Budokan: The Martial Spirit
  - Centurion: Defender of Rome
  - Gorbatchev Ace
  - Indianapolis 500 the Simulation
  - Lakers versus Celtics and the NBA
- Playoffs
  - LHX Attack Chopper
  - Low Blow
  - Keef the Thief
  - Kings of the Beach
  - Play of the Day
  - PGA TOUR Golf
  - Populous
  - Ski or Die
  - 688 Attack Sub
- Electronic Zoo
  - Black gold
  - Spherical
  - Tennis Cup
  - Treasure Trap
  - Xiphos
- Epyx
  - Omnicron Conspiracy
- Gamestar
  - Face Off!
  - Take Down
- Infocom
  - Circuit's Edge
- InnerPrise
  - Final Orbit
  - Lost dutchman Mine
- Konami/Ultra
  - Castlevania
  - Teenage Mutant Ninja Turtles
- Kyodai
  - Murder Club
  - Psychic Wars
- Lucasfilm Games
  - Their Finest Hour: The
  - Battle of Britain
  - Indiana Jones and the Last
  - Crusade: The Graphic
  - Adventure
- MicroIllusions
  - Questmaster I: The Prism
  - of Heutotol
- MicroPlay
  - Command H.Q.
  - Mega Traveller II
  - Mid-Winter
  - Universal Military Simulator
  - Weird Dreams
- MicroProse
  - Lightspeed
  - Knights of the Sky
  - Red Storm Rising
  - Sid Meier's Railroad Tycoon
  - Silent Service II
  - Sword of the Samurai
  - F-15 Strike Eagle II
  - F-19 Tank Platoon
- Mindcraft Software
  - Keys to Maramon
  - Magic Candle II
- Mindscape
  - Clubhouse Sports
  - Fiendish Freddy's Big
  - Top O'Fun
- Omnitrend Software
  - Breach 2
  - Rules of Engagement
  - Universe 3
- Origin Systems
  - Bad Blood
  - Times of Lore
  - Windwalker
- Paragon Software
  - The Punisher
  - Spider Man & Captain America
  - in Dr. Doom's Revenge
  - Mega Traveller I: Zhodani
  - Conspiracy
  - X-Men:Madness in Murder
  - World
  - X-Men II
- Share Data
  - Avoid the Noid
- Sierra
  - Code Name Iceman
  - The Colonel's Bequest
  - The Conquest of Camelot
  - Hero's Quest
  - Hoyle's Book of Games
  - Hoyle's Book of Games II
  - Keeping with the Jones
  - King's Quest IV
  - Leisure Suit Larry II
  - Lesiure Suit Larry III
  - Oil's Well
  - Police Quest 2
  - Silpheed
  - Sorcerian
  - Space Quest III
- Software Toolworks
  - Life and Death II
- Spectrum/Holobyte
  - Faces (June 1990)
- Strategic Simulations
  - Champions of Krynn
  - DragonStrike)
  - Secret of the Silver Blades
- SubLogic
  - Air Transport Pilot
- Taito
  - Arkanoid II: The Revenge of Doh
  - Bubble Bobble
  - Castle Master
  - Day of the Pharaoh
  - Kiwi Kraze
  - Operation Thunderbolt
  - Puzznic
  - QIX
  - Rastan
  - Renegade
  - Sky Shark
  - Rambo III
  - Where Time Stood Still
- Three-Sixty Pacific
  - Harpoon
  - Sands of Fire
- Titus
  - Dark Century
  - Fire and forget 2
  - Wild Streets
- Virgin Mastertronic
  - Robin Hood
  - Spirit of Excalibur
  - Spot
  - Wonderland

■ HELP! Two fingers up

What is CP/M.? Why is CP/M? I've arrived in computers late in life. After a long and productive career as a printer, I was made redundant/retired aged 55 with a lot of life left in the old dog yet. To write (type) letters and learn about printing on computers, a computer shop said that I need a PCW8512. I bought this and the word processing that comes with it (*LocoScript*) has allowed me to become an adequate two fingered secretary. Now that I can make letters, I'd like to try something a bit more adventurous.

On the other side of the disk is something called CP/M. When I load this up I get a screen with an A> and not much more.

I think that there's more to this CP/M than meets the eye. How can I use CP/M to typeset and do Desktop Publishing using my computer. A book on the subject of computers in the library says that CP/M is a powerful business language.
Raymond Kruszynski, Dartford

There are many adventurous things that you can do with a PCW but I'm afraid serious DTP isn't one of them. If you were a printer before you retired, I suspect that the DTP packages available for the PCW won't be up to your standards.

The PCW is an 8-bit computer runing an operating system that arrived many years before DTP and there was no provision in CP/M to make the sort of visual manipulation necessary for serious DTP. You could try your local computer software stockist for PCW DTP programs but if the results dissappoint you, don't be surprised.

The CP/M operating system in your PCW was the first serious generic operating system. It isn't a business language as your library book suggests, but an environment.

CP/M stands for Control Program for Microprocessors or Control Program and Monitor depending on who you're listening to.

The first is the more common and in my opinion, the better description. When you insert the CP/M disk, it loads a program called EMS (Early Morning Start). This loads into memory and produces the A> prompt on the screen. Your computer now has the CP/M operating system on board and is ready to load a program.

The point of CP/M was that many computers based on the Intel 8080 or the later Zilog Z80 processor could run it. Although the architecture of these computers was different, once CP/M was running, it offered a known environment (operating system) for programs to run in.

Business and application programs were written to run under CP/M rather than on a particular machine and the first workable generic environment was born.

The early microcomputers were 8 -bit beasts limited to 64K of addressable memory and the programs had to be compact to fit into the available memory. If you look at commercial CP/M programs, you will find elegant compactly programmed code.

The memory constraints caused programmers to use the available memory as a Transient Program Area (TPA) This meant that the only thing loaded into memory was the part of the program in use at any given time. Routines for ancilliary tasks etc would be loaded as and when required. This made best use of the small program area which could be as little as 22K on some machines.

The PCW has 256K or 512K of memory and program area isn't as tight although the 8-bit Z80 can only address 64K at a time. The rest of the memory is paged in and out in 16K lumps as required.

There are many useful utilities that will run under CP/M and some will load as RSXs. An RSX is a resident system extension and is a small program that is loaded into a spare bit of memory and called when required.

You can obtain megabytes of CP/M public domain software from WACCI on 081-898 1090.

WRITING ON AN AMIGA

The first serious application most people ask their computers to do is to write a letter. In this week's Amiga series we look at word processing and DTP.

One of the basic functions of computers nowadays is to remove the drudgery of typewriters or the humble ball-point pen by allowing us to use word processors. With the capacity to make corrections as you go along or afterwards, to check your spelling, to print as many copies of a document as are needed in a clear, legible way, it's no wonder these gadgets have caught on.

KNOW WHAT YOU WANT

Choosing a word processor isn't as clear-cut as it always used to be. The conventional definition of a word processor was merely a program that allowed the on-screen manipulation of text: but these days, machines such as the Amiga have spawned a new breed of word processor, the word publisher, which includes many features previously only to be found within powerful desktop publishing packages.

Before choosing your word processor, decide which of these two you want. If the main use for your word processor will be to produce letters to the bank manager, bulk documents etc, then you're not going to need a package that allows you to drop flowers and other clip-art all over the page. If, on the other hand, presentation is all-important to you, then a word publisher may well be just the one to go for.

THINGS TO LOOK FOR

For most people, a spelling checker is an obvious choice as an add-on. So as not to disrupt your working too much, it is important that the spelling checker is built into your word processor – having to leave your word processor every time you wish to carry out a spelling check can seriously affect the creative flow!

One feature that is starting to become increasingly popular among word processor users is the thesaurus. If you get stuck for an appropriate word, or you've used the same word 14 times in one sentence already, the thesaurus will provide you with an alternative.

If you're using a word processor to produce mailouts for a club or business, then a mail merge facility is more of a necessity than a luxury. These handy little add-ons are used for producing personalised copies of a large number of letters without having to make the necessary changes yourself.

One feature that really sets the word publisher apart from the word processor is graphics import. The ability to import some form of graphics can be very handy when you wish to illustrate a point without having to resort to reams of text. The obvious applications are within business presentations (graphs, pie charts etc) but subtle use of fancy fonts can enhance just about any document.

If you're preparing text for use in another word processor, especially on another computer such as a PC, chances are that it won't load. This is where ASCII compatibility can be a real life-saver. ASCII files are just text files that have had all layout information such as margin settings, text styles etc stripped out.

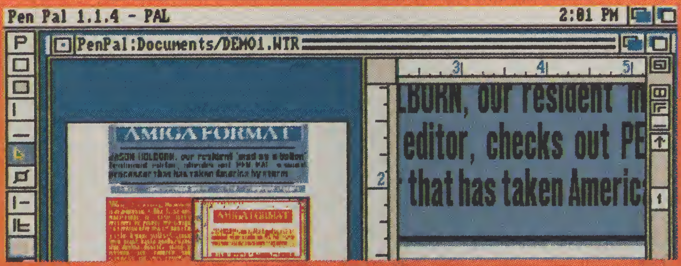
MOVE UP TO DTP

The next step on from word publishers are desktop publishers. From parish newsletters to full-colour glossy magazines, desktop publishing, or DTP, is used to give that professional look to printed documents.

Amiga DTP is, in fact, used by several national magazines. The main idea of DTP is to produce a representation of the finished page on screen, including text in finished typefaces and pictures cut and sized to fit. The only limitations are imposed by the quality of the printers you use – but from doing it better than you do already, you will soon realise it's only a short step to doing it perfectly. ■

Damien Noonan is editor of Amiga Format *magazine. These articles are reprinted from his book,* Get the Most Out of Your Amiga, *available from Future Publishing Ltd, The Old Barn, Somerton TA11 7BR. It costs a very reasonable £9.95.*

THE BEST BUYS FOR AMIGA



• **Pen Pal** *from Softwood: one of the new breed of 'word publishers', it has the most powerful graphics handling in its class.*

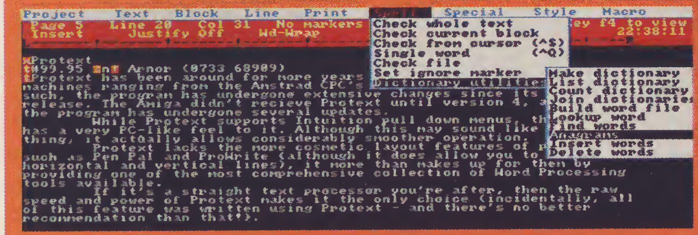
PAGESETTER 2 (Gold Disk, £129.95) is the little brother of *Professional Page*, using many of the same techniques in its working. Not only is it very good in its own right, but also it comes (under the name *Office Page*) in a package including a good basic word processor (*Transcript*, renamed *Office Write* for this bundle), a complete flat-file database and an excellent spreadsheet (*Advantage*). At £129.95 the lot, this has to be one of the best deals in the Amiga market.

PROTEXT (Arnor, Version 4 £99.95, Version 5 £149.95) must be the favourite choice if you want the best and have the cash. It's the one Keith Pomfret uses, it's got a very long pedigree and compatible versions exist for all sorts of machines from the Amstrad CPC to the IBM PC. The new version 5 has new dictionaries and file handling, but the older version 4 remains available and is still recommended.

PEN PAL (Softwood Inc, £129.95) is one of the new breed, a word publisher, with the most powerful graphics handling around – and yet for pure writing it remains quick and easy. A built-in database makes mail merge easy and a fun addition is a 'readability index' that grades your writing from primary school to university standard.

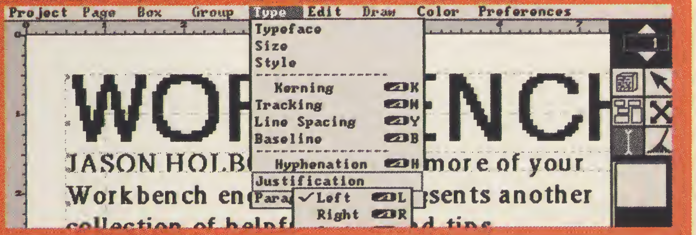
PROFESSIONAL PAGE (Gold Disk, £129.95) is a powerful and quietly competent DTP package with a friendly interface. It is typographically excellent, but what makes *Professional Page* a stunning DTP product – and not just a stunning Amiga product, but one that stands up very well to top of the range PC and Macintosh packages – is the degree of control it offers over colour separations. Put simply, *Professional Page* is currently *the* package for high-quality DTP. However, it needs a megabyte of memory to run and two drives are recommended. Note, too, that version 2 has just been released and should be much improved – look for reviews very soon.

SCRIBBLE II (Microsystems Software, £49.95) is an enduringly popular and relatively inexpensive no-frills word processor. It gets the job done and a lot of people use it. What more can you say?



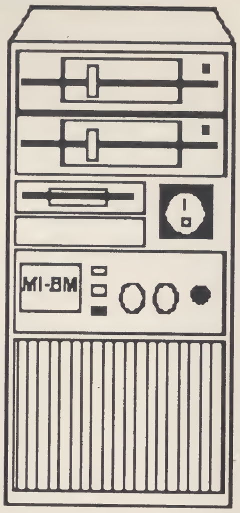
```
Page 5   Line 20   Col 31   No markers                ey f4 to view
Insert      Justify Off     Wd-Wrap                        22:38:11

Protext
£99.95 n Arnor (0733 68909)
Protext has been around for more years
machines ranging from the Amstrad CPC's
such, the program has undergone extensive changes since its
release. The Amiga didn't recieve Protext until version 4,
the program has undergone several updates.
      While Protext supports Intuition pull down menus, th
has a very PC-like feel to it. Although this may sound like
thing, it actually allows considerably smoother operation.
      Protext lacks the more cosmetic layout features of p
such as Pen Pal and ProWrite (although it does allow you to
horizontal and vertical lines), it more than makes up for them by
providing one of the most comprehensive collection of Word Processing
tools available.
      If it's a straight text processor you're after, then the raw
speed and power of Protext makes it the only choice (incidentally, all
of this feature was written using Protext - and there's no better
recommendation than that!).
```

• **Protext** *from Arnor: head-down, no-nonsense word processing at its best. The price is professional – £150 – but so are the results.*



• **Professional Page** *from Gold Disk: as the name might imply, this excellent package is currently the serious option for Amiga DTP.*

Breaking The Price Barrier



DON'T
MISS
IT

MI-BM AT 286	MI-BM AT 386SX	MI-BM AT 386
Intel 80286-12 Microprocessor	80386SX-16 Microprocessor	80386-25 Microprocessor
Landmark Speed 16MHz	Landmark Speed 21MHz	Landmark Speed 28MHz
1Mb RAM Expandable To 4Mb On-Board	1Mb RAM Expandable To 8Mb On-Board	1Mb RAM Expandable To 8Mb On-Board,
Hard/Floppy Disk Controller	Hard/Floppy Disk Controller	Hard/Floppy Disk Controller
1.44Mb 3.5" Floppy Disk Drive	1.44Mb 3.5" Floppy Disk Drive	1.44Mb 3.5" Floppy Disk Drive
40Mb AT Hard Disk Drive	40Mb AT Hard Disk Drive	40Mb AT Hard Disk Drive
2 Serial/ 1 Parallel/ 1 games	2 Serial/ 1 Parallel/ 1 games	2 Serial/ 1 Parallel/ 1 games
VGA 16 bit 256Kb Display Card	VGA 16 bit 256Kb Display Card	VGA 16 bit 256Kb Display Card
14" VGA Monitor	14" VGA Monitor	14" VGA Monitor
Shadow RAM & EMS Feature	Shadow RAM & EMS Feature	Shadow RAM & EMS Feature
6 Expansion Slots	8 Expansion Slots	8 Expansion Slots,
101 Key Keyboard	101 Key Keyboard	101 Key Keyboard
Smart Mini Tower Case	Smart Mini Tower Case	Smart Mini Tower Case
200W Power Supply	230 W Power Supply	230 W Power Supply
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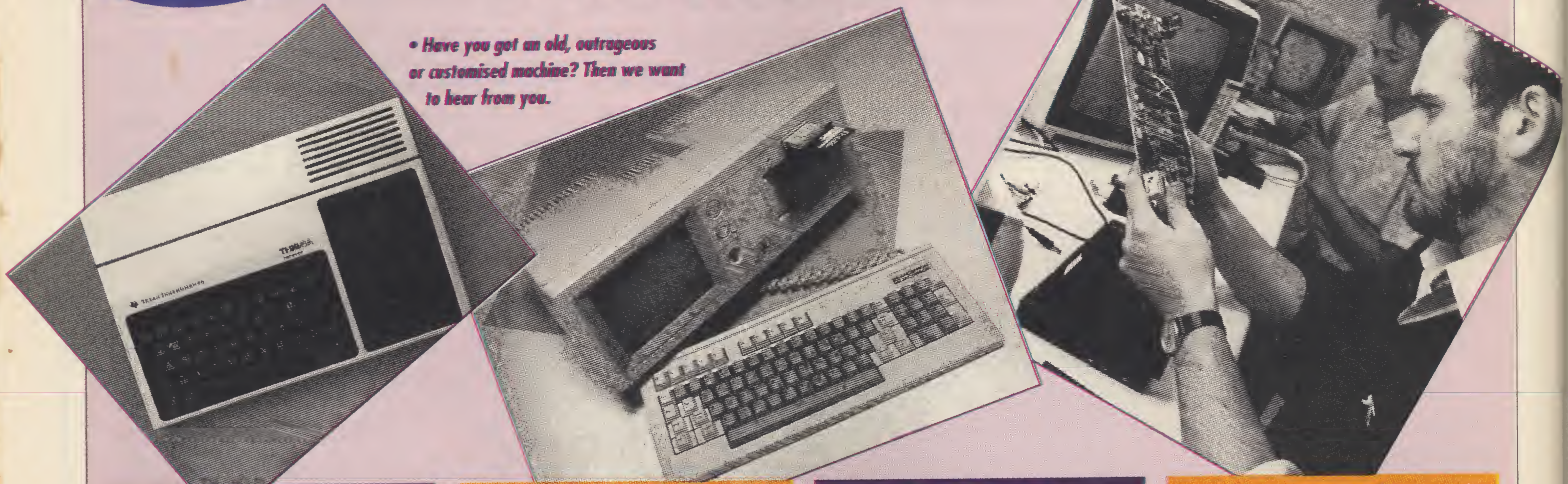
OUTRAGEOUS COMPUTERS WANTED!

WIN £50

We will be running a series of features on readers' computers, so we need your help! You could see your machine in print and win a prize...



• Have you got an old, outrageous or customised machine? Then we want to hear from you.

CLASSICS

Orics, Enterprises, Video Genies, we love 'em. We are planning a major feature on some of computing's more elderly residents and we'd love to hear from anyone out there still using their pet PET or amazing Atom.

Send us a picture and details on what you are doing (or have done) with the machine and you could be in line for a prize.

BY THE WIRE

Every computer owner who knows how to use a screwdriver and a soldering iron seems to use them to attach all manner of gizmos to the back of their machine. We want to see your best efforts; what have you made a computer do with a couple of transistors and some Veroboard? A satellite link? Robot control? An oven timer? A prize awaits the best or most amusing.

CUSTOM KIT

You start with a simple 8-bit. You add more memory. You beef up the processor. Add another disk drive. And a new box. Now a hard disk. And a MIDI interface. A CD-ROM. A colour monitor. Before you know it your Spectrum's become a NeXT. How far has your machine gone? We want to see pictures and specifications of the most over-the-top customised machine in Britain.

ON THE CHEAP

Express readers love a bargain; you only have to see how many reader ads we get a week to work that out! But who has got the best deal? Did you pick up your PC for a ton? Or get an outrageous rate on an Amiga? We want to know about the best bargains you've ever seen (not just computers but peripherals and software too) for a feature on cut price computing.

WHAT'S THE USE?

Computers aren't just for playing games, there are hundreds of more serious uses you can put one to, and some off-the-wall ones as well. So if your CPC is doing the air traffic control for Heathrow or running the reactor at Sizewell A then drop us a line.

If your computer is a bit unusual, drop us a line with the details and a picture to: Outrageous Machines, New Computer Express, 30 Monmouth Street, Bath BA1 2BW. Include a stamped self-addressed envelope if you want your pictures back. The most amazing entry in the five categories we receive by February 14 will each win a brand new £50 note.

★ POCKET SIZED ★ PC-COMPATIBLE ★ PERSONAL ORGANISER ★

ATARI Portfolio

THE PC IN YOUR POCKET

The new Portfolio from Atari is the world's first pocket-sized electronic organiser that is also a powerful PC compatible computer, with a full QWERTY keyboard and scrolling 80×25 character display.

Portfolio includes everything you would expect from an electronic organiser - an address and telephone book, time manager, diary and sophisticated calculator.

Portfolio also includes several functions that you would not expect - a spreadsheet for your personal budget and expense records, as well as a text processor for typing memos and letters.

And, because Atari's Portfolio is PC compatible, it can communicate with your desktop PC at home, or in the office. You can transfer files from one to the other, to enable you to update your reports and figures with the Portfolio while you are on the move.

FOR ONLY £199 INC VAT

SPECIFICATION

- ★ ***Processor:*** Intel 80C88 at 4.9152Mhz.
- ★ ***Operating System:*** Compatible with MS-DOS 2.11.
- ★ ***Internal ROM:*** 256K containing BIOS, operating system and applications suite.
- ★ ***RAM:*** 128K with an internal RAM disk, configurable from 8K. Externally expandable to 640K RAM.
- ★ ***Keyboard:*** 63 keys, QWERTY, IBM PC BIOS compatible. Buried numeric pad and function keys. Optional key click.
- ★ ***Character Set:*** Extended IBM ASCII (255 characters).
- ★ ***Mass storage:*** credit card sized memory cards (32K or 64K or 128K RAM).
- ★ ***Display:*** Graphics LCD, supertwist technology, MDA compatible, 40 columns x 8 lines, 240 x 64 pixels (with the option to window a full 80 x 25 character display). Keyboard controlled contrast.
- ★ ***Peripherals:*** 60 pin expansion BUS to take serial and parallel ports and memory expansion units.
- ★ ***Size:*** 8" x 4" x 1" (200mm x 105mm x 29mm).
- ★ ***Weight:*** 495 grammes (with batteries).
- ★ ***Applications:*** calendar and diary, address and phone book, Lotus 1-2-3 compatible spreadsheet, text processor, communications software.

COMING SOON!

In addition to the excellent software built-in to the Portfolio Free of Charge (see right), other software and peripheral products, such as the sophisticated Pocket Finance package and serial/centronics interfaces are available. And it doesn't stop there. Many manufacturers have recognised the potential of the Portfolio and have already started to design new peripherals and software. Products currently under development include: Serial interface with built in mini modem, Apple Macintosh interface, business, utility and programming software plus a range of adventure and battle strategy games. For further free details on the Portfolio range, fill in the coupon below and return it to Silica Systems now.

5 BUILT-IN APPLICATIONS TO GET YOU ORGANISED!

To get you started, Portfolio comes with a suite of five useful functions built-in, all accessible from a simple menu display.

TIME MANAGER

More than just an electronic diary, the Portfolio Time Manager enables you to plan your appointments via a comprehensive calendar and diary. It can even be programmed to sound an audible alarm at specific times to remind you of important appointments.

CALCULATOR

Your Portfolio will be invaluable in the office or at home as a powerful pocket calculator. It has a full range of functions, including factorial, power and root calculations, all with multi display formats and memories.

ADDRESS BOOK & DIALLER

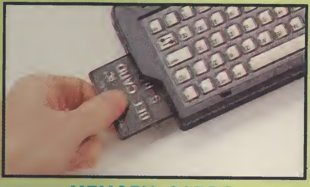
Portfolio has a complete address book facility that allows you to store hundreds of addresses and phone numbers. And, at the touch of a button, you can retrieve any one of them, or search for a specific grouping, such as "all Italian restaurants". And, when you are ready to book your table, hold your Portfolio to your telephone mouthpiece and use its special built-in tone dialler to dial the number for you.

TEXT PROCESSOR

The Portfolio's built-in text processor program includes word wrap, line and column count, string search, in fact most of the functions you would find in a word processor. It handles printer and word processor control codes and allows easy transfer of files between Portfolio and your desktop PC.

SPREADSHEET

For real calculating power, Portfolio has a Lotus 1-2-3 compatible spreadsheet built-in. It has 127 columns x 225 rows and reads/writes Lotus V1.0 and V2.01 files, so you can transfer data to and from Lotus 1-2-3 on your desktop PC. The Portfolio's 256K ROM includes MS-DOS and PC BIOS compatible systems software.

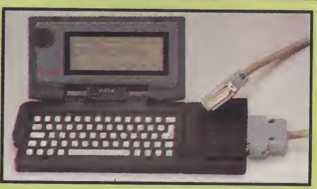


MEMORY CARDS

Portfolio can store and retrieve data and programs from its own RAM, or from small credit card size memory cards, that slot into its built-in card drive. The cards are available in three sizes, 32K, 64K and 128K, so you can carry a library of data in your pocket. The card drive also accepts ROM cards, which can contain commercial or custom software.

POWER SUPPLY

Portfolio is powered by three AA batteries which will run for up to six weeks with normal use, or from the mains using an adaptor. All the peripherals take their power from the Portfolio, so no extra batteries or adaptors are required. A 'battery-low' warning and memory back-up ensure that information is not lost when the batteries are changed.



INTERFACES & PERIPHERALS

Portfolio can communicate with other computers and supports a growing range of peripherals via a built-in 60 pin bus connector. Peripherals available include serial and parallel interfaces and memory expanders (to 640K). You can also add a card drive to your desktop PC, to enable it to read/write to Portfolio's cards.

SILICA SYSTEMS OFFER YOU

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CREDIT PAYMENT TERMS: Silica are licensed credit brokers - details on request.

Before you decide when to buy your new Atari Portfolio, we suggest you think very carefully about WHERE you buy it. Consider what it will be like a few months after buying your Portfolio, when you may require additional peripherals or software, or help and advice with your new purchase. And, will the company you buy from contact you with details of new Portfolio products? At Silica Systems, we ensure that you will have nothing to worry about. Silica Systems is a new division of Silica Shop, the UK's leading Atari specialists. This new division has been established to provide a service to the more serious home user, as well as to business and education purchasers. Silica have been established for over 12 years, and have an annual turnover of £13 million. With our unrivalled experience and expertise, we can now claim to meet our customers requirements with an understanding which is second to none. But don't just take our word for it. Complete and return the coupon now, for our latest Free literature and begin to experience the "Silica Systems Service".

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PLEASE SEND INFORMATION ON PORTFOLIO

Mr/Mrs/Ms: .... Initials: .... Surname: ....
Address: ....
....
.... Postcode: ....
Tel (Home): .... Tel (Work): ....
Company Name: ....
Which computer(s), if any, do you own? ....

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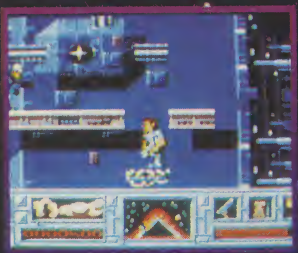

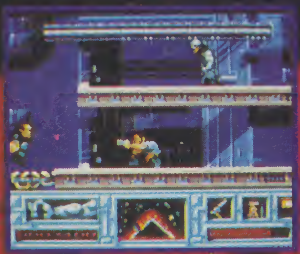

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